American Engineer

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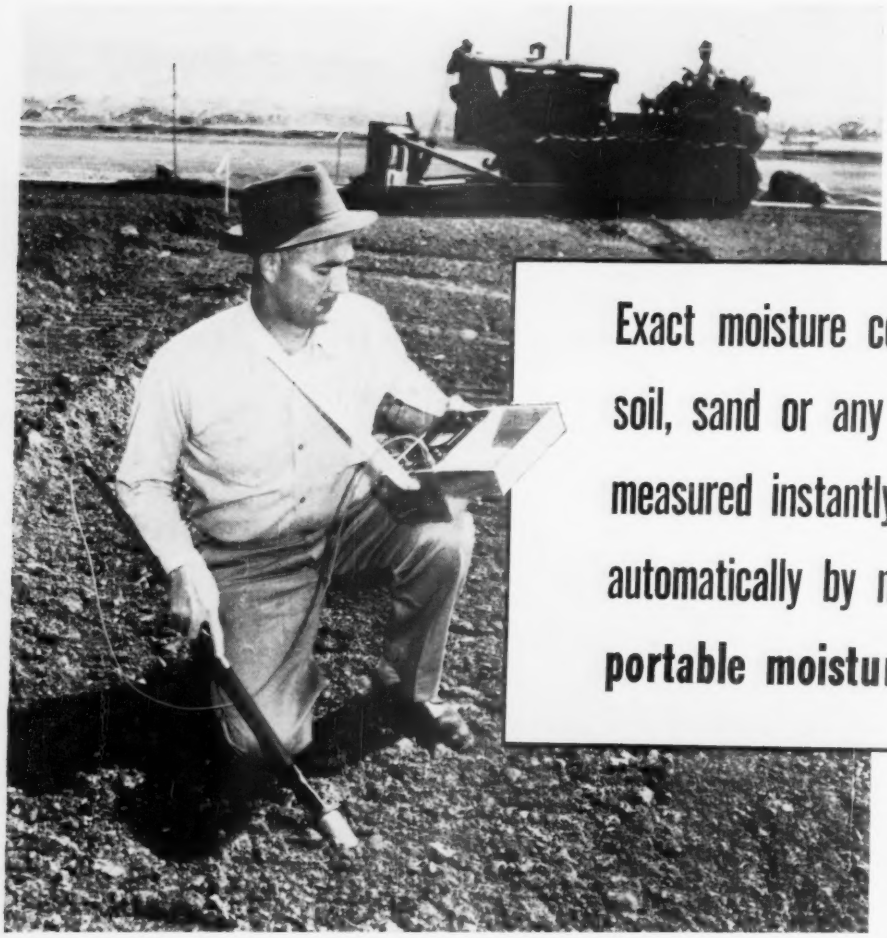
# THE MEANING OF YOUR PROFESSION

BY VICE ADMIRAL H. G. RICKOVER

***By Special Permission, the American Engineer is Proud to Present Part One of a Three Part Series by This Famous Commentator on Modern American Life. The Article Begins on Page 17—Concluding Installments Will Appear in Subsequent Issues.***



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# American Engineer

JANUARY 1960
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## Professional News and Features


General News .... 6
Consulting .... 8
Government .... 10
Industry .... 13
Registation .... 14
Society News .... 47

The Meaning of Your Profession .... 17
By Vice Admiral H. G. Rickover

Why I Like Working for a Larger Company .... 23
By Thomas M. Linville, P.E.

NSPE Launches Poll on Question of Unity .... 28

Proper Use of the P.E. Seal .... 40
By Howard J. DePree, P.E.

The Road to Good Engineer-Management Relations .... 42
By H. P. Cooper, P.E.


## Regular Departments


Letters .... 4
Meetings of Note .... 4
This Month .... 7
Strictly Business .... 15
From Washington .... 21
Professional Profiles .... 27
New Literature .... 45
Dates to Remember .... 50
Thoughts on Professionalism .... 54
Classified .... 60
With the Auxiliaries .... 60
Professional Directory .... 61
Advertisers' Index .... 65
Progress in Products .... 66



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# Letters to the Editor

### Wasted Engineering . . .

Dear Editor:

I should like to call your attention to the following editorial by Irwin H. Such, editor-in-chief of *Steel* magazine, as it would appear to be of general interest:

"As a problem in industry, 'Who Pays for Engineering? (*Steel*, Aug. 30) goes deeper than you think.

"We pointed out that if you built a new house, you would hire an architect to draw up plans, submit them to several contractors, then award the contract to the one you thought would do the best job at the lowest price.

"You would pay for the 'engineering.'

"Not so in the metalworking industry. If you needed a new processing line or a piece of equipment built to your requirements, you would ask perhaps six suppliers to submit proposals. One would get a contract.

"You would expect the supplier to:

1. Analyze the problem and come up with a tentative solution.

2. Spend 'X' number of engineering hours drawing up detailed specifications.

3. Build the equipment.

4. Guarantee that the equipment would perform as promised, which could mean substantial 'debugging' costs.

"The five potential suppliers that lost out would be obliged to follow Steps No. 1 and 2.

"The result: Hundreds of wasted hours of problem solving and engineering time. Since few jobs are alike, seldom can the wasted work be diverted to a useful purpose. What does this mean to you, the buyer?

"In placing a contract with the successful bidder, you may think you are paying for engineering only once.

"But, remember, the successful bidder isn't always successful. He must charge you for part of the engineering on the jobs he lost.

"So, in reality, you are paying for wasted engineering."

ALFRED H. SAMBORN, P.E.
Chairman, NSPE Functional Section of Consulting Engineers in Private Practice
Toledo, Ohio

### The Labor Law . . .

Dear Editor:

In the November, 1959, issue of AMERICAN ENGINEER, the new labor law is described by Mr. Stearman.

Because of the lack of specific terms exempting professional employees from the "construction industry provision," I am willing to bet my bottom dollar that NSPE will be acting as "friend of the court" on this point many times in the years to come.

At some point in the fair game, a judge will write an adverse opinion, despite the intent of the Senate Labor Committee report. After all, a judicial opinion opposite to legislative intent has happened before.

The obvious notch in the present law is all the invitation unions will need in attempting to establish a precedent for the construction situation and thus extend it elsewhere.

S. E. WEIDLER, P.E.
Scotia, N. Y.

### More Metric . . .

Dear Editor:

Apropos of your current discussion of the pros and cons of adopting the metric system, I just ran across the following in a field manual of the U.S Army.

"British Weight Markings—If British weights are marked with four separate figures in one line, the numbers represent long tons of 2240 pounds, hundredweights of 112 pounds, stones of 14 pounds, and pounds. Thus 4-2-3-7 equals 9233 pounds."

We Americans ought to recognize the simplicity of such a system. All you have to do is to compute it thusly:

$$\begin{array}{rrr} 4 \times & 2240 = & 8960 \\ 2 \times & 112 = & 224 \\ 3 \times & 14 = & 42 \\ & & 7 \\ & & \hline \\ & & 9233 \end{array}$$

## Meetings of Note

**Society of Plastics Engineers**—Annual Technical Conference, January 12-15, Conrad Hilton Hotel, Chicago, Illinois.

**Institute of the Aeronautical Sciences**—Annual Meeting, January 25-28, Hotel Astor, New York, New York.

**Plant Maintenance and Engineering Show**—Annual Exhibition, January 25-28, Convention Hall, Philadelphia, Pennsylvania.

**American Institute of Electrical Engineers**—Winter Meeting, January 31-February 5, Hotel Statler, New York, New York.

Just three multiplications and one addition serves to keep one on one's toes and all that sort of thing, what? And, of course, if the ruddy goods happen to cost £1-7/4½ per pound (that's one pound, seven shillings, four-pence, ha'penny) it's a simple matter to compute the cost of the lot:

$$\begin{array}{rrrr} £1 \times & 240 = & 240 & \text{pence} \\ 7s \times & 12 = & 84 & \text{pence} \\ & 4\tfrac{1}{2} = & 4\tfrac{1}{2} & \text{pence} \\ & & \hline \\ & & 328\tfrac{1}{2} & \text{pence per pound} \end{array}$$

Multiply this by 9,233 lbs. and you have 3,033,040½ pence. Now divide this by 240 and you'll get £12,647 with 160½ pence left over. Divide this by 12 and you'll get 13 shillings with 4½ pence left over, so the total price is £12,637-13/4½! Elementary, really! Of course, if the goods were really posh, we would have to put the price into guineas: this is so unusual an amount that a guinea is neither coined nor printed, but we would then only alter the computation by dividing by 21 shillings to the guinea, etc. Nothing to it!

My forebears were all Anglo-Saxon, but when I run into such things as a "hundredweight" being a hundred *and twelve* pounds, I rejoice that one of them was Scotch enough to save up his pounds, shillings, pence, half-pence, and farthings to buy a boat ticket!

KENNETH A. MACFADYEN, P.E.
Bernardsville, N. Y.

### And More Metric . . .

Dear Editor:

The endless (and tiresome) debate in your magazine around a simple and fundamental issue such as the Metric system amazes me. May I take the liberty of relating an actual experience?

Approximately 20 years ago, a manufacturer of process equipment called me. He had a stack of drawings and an order to build. The dimensions were metric. He requested an estimate for converting the metric dimensions into British.

Since the time limit was insufficient, I made a counterproposition which was accepted. The drawings were reproduced, with English overlays for machining instructions. The words "Metric" and "British" were not even mentioned.

I had all pocket rules and yardsticks with inches on them collected and locked away. Instead, metric rules were issued, and the men told briefly to apply them in conjunction with the layout. In case of doubt, they could come to me and ask.

The inch drills and taps were col-

lected and locked away. Metric drills and taps were issued.

When assembly time came, everything fitted just so. There was no confusion worth mentioning, even fewer errors than usual, no need to teach—or to show off—any French, and certainly no trace of any pandemonium.

The one and only incident was that on the second or third day one elderly foreman said, "Now this is sure a handy system to work with. Why don't we use it all the time?" I told him, "That's up to you."

Any questions, anybody?

MAX WULFINGHOFF, P.E.
Erlanger, Ky.

### Frosh Exams . . .

Dear Editor:

Your short article on the Missouri student in the November issue brings to mind the fact that the use of examination of university freshmen was in practice at the University of Florida quite some years ago. Presumably, the university there is still making use of this system whereby all freshmen entering the school are examined during freshmen week and slightly later in the basic subjects that the student should have for entrance to the university. Those who showed sufficient knowledge were automatically given credit in basic mathematics, humanities, and a number of other subjects required of freshmen before proceeding to more advance subjects.

This makes sense. Due to inclination of the student and various degrees of preparation from the high schools the freshmen enter the university with a wide divergence in aptitudes and knowledge. Any educational system that imposes a rigid compliance in taking the freshmen subjects without taking into account what the freshmen knows is imposing a burden on itself and on the individual if it does not allow him to take advantage of the knowledge with which he entered the university. A policy of examination would pay off in allowing the better prepared man to proceed with more advanced or more varied work in the same length of time.

WILLIAM H. LOEST, P.E.
Kingsport, Tenn.

### Arouses Ire . . .

Dear Editor:

The article "Did P.E. Practice Architecture?—Question Before N.J. Board" in AE, Dec., 1959, issue, arouses an ire in me which has been smouldering for quite some time. I am registered as professional in the branch of electrical and as such am employed and my position brings me in contact with various projects designed by architectural firms. Some of these plans have the seal of a registered electrical engineer on them, alongside the seal of a registered architect, which signifies that a qualified person designed his particular phase of the project. This is as it should be but this is not the case in far too many instances in this State of Ohio. In many cases, both for public and private buildings, the architect has designed and written, or, I should say, attempted, to design and write the entire electrical layout and specifications. In all of these cases, the general specifications are very specific in requiring the successful electrical contractor to furnish a detailed set of plans for the electrical work. Perhaps in these cases, the architect believes the electrical work is merely a minor part of his complete project and that this important phase may be referred to in a general way, but this should not be allowed. I have observed plans on large schools, churches and factories which could not possibly have had the attention of an electrical engineer, and which depended entirely upon the designing being done by the electrical contractor. Invariably both safety and economy are sacrificed.

Cases such as now being heard in New Jersey have happened before but it is always the Society of Architects that are the complainants. Why not reverse these tactics which may result in a little more recognition of the value of a registered professional engineer being required by the registered architect? Court cases, such as the one referred to, strains the tie between architect and engineer and causes serious damage to both. This is contrary to all creeds and codes of ethics to say the least. It should not be given publicity.

HAROLD G. COOPER, P.E.
Defiance, Ohio

### Liked Articles . . .

Dear Editor:

Thanks for your detailed story of the proceedings in the McCamy case (December, AE). This matter has been a subject of continuing interest at our Passaic County Chapter meetings.

I think that Engineer Monsees' "Anatomy" article might well be taken as a reprint for the use and study of every engineer. The ideas presented . . . stimulate me greatly, especially the statement concerning the paucity of engineers who know how to get along with others.

JOHN S. PARKE, P.E.
Bergenfield, N.J.


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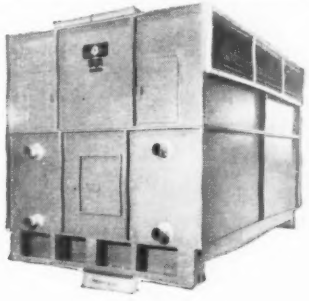

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# Registered Engineers Rate Higher in ITE Salary Survey

"It would appear that there are definite monetary benefits to be gained from professional registration and that such benefits accrue almost immediately upon entry into the traffic engineering field."

This is one of the major findings of a comprehensive survey of the members of the Institute of Traffic Engineers. Sixty-five per cent of the ITE membership are registered, plus an unstated additional number who are certified as engineers-in-training. The median annual salary of registered members was significantly above that of others, at all ages. The salary difference increases from approximately $600 to age twenty-seven to approximately $2,000 after age forty-two.

The median annual salary of the traffic engineers increases consistently and steadily with age, the survey disclosures—being approximately $7,000 at age 25; $8,000 at age 30; $10,00 at age 40, and $11,000 at age 50. In other findings: 67 per cent have civil engineering degrees and 20 per cent other degrees, 32 per cent of the members are in state highway departments, and 22 per cent in cities having over 250,000 population.

Salaries in nongovernmental organizations are considerably higher than those in government employment. The median income for the consultant - industry - association group is approximately $1,500 above the median salary for all ITE members at age 30; $3,600 at age 40, and $5,000 at age 50. But a comparison of ITE members' salaries with those of other engineers in state and local government suggests that traffic engineers have a definite salary advantage.

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*(Circle 3 in Readers' Service Dept.)*

## Educator Asks Engineers To Play Important Role

A noted engineering educator has called on the engineer to play the key role in bridging the ever-widening gap between man's technological and social progress.

Speaking in response to receiving the Professional Progress Award at the annual meeting of the American Institute of Chemical Engineers, Dr. W. R. Marshall of the University of Wisconsin noted the growing difficulty of "understanding, predicting and controlling" the increasingly heavy impact which the achievements of modern science and engineering are having on culture and society.

The engineering profession, he proposed, can do much to alleviate this problem because it "can assume a unique role as the focal point for uniting technology and the social sciences on certain common ground for the advancement and improvement of mankind on a broad front."

## ASTM Committee Week Planned in Chicago

Approximately 1500 to 2000 members, committee members, and visitors will meet at the American Society for Testing Materials' Committee Week meeting in Chicago at the Hotel Sherman, February 1-5.

About thirty of the society's main technical committees will hold some 350 meetings of subcommittees and working groups to advance toward completion of the year's committee work in anticipation of preparing reports for presentation to the society at the annual meeting at Atlantic City next June.

## Many Companies to Exhibit At 1960 Atomic Exposition

Seventy-one companies and two foreign governments have reserved exhibit space in the 1960 Atomic Exposition, April 4-7, in New York City's Coliseum.

Predicting a 300 per cent increase in attendance over previous expositions, Nuclear Congress officials sponsoring the show point out that this is the first major meeting in this field in the New York area in three years.

International aspects of the 1960 session are indicated by the fact that both the Canadian and the French governments have taken exhibit areas three times as large as in any previous show. These government exhibit areas will be shared by a number of firms from the respective countries.

## New Sanitary Engineering Publication is Released

*Sanitary Engineering Manpower* by Frank A. Butrico and Israel Light of the Public Health Service's Division of Engineering Services, discloses valuable information on the nation's sanitary engineering personnel.

Among the highlights: medium age, 44.5 years; about 56 per cent have a B.S. degree and 40 per cent have a graduate degree; 33 per cent are in consulting work. About 60 per cent of the almost 4,000 respondents have 15 or more years of professional work experience. Fifty per cent are employed by government, 27 per cent in business or industry and 15 per cent are self-employed, with 5 per cent in education.

The median income is $8,300, broken down as follows: government, $7,800 (not including the most recent ten per cent pay raise for Federal employees); business or industry, $8,700; self-employed, $14,200; education, $7,200. More than seventy-five per cent of the group are registered, and all but 190 belong to at least one professional society.

# "This Month"

Probably no other military man in recent history has become as influential in the engineering profession as has Vice Admiral H.G. Rickover. For this reason if for no other, the American Engineer is proud to begin in this issue a three-part series by the Admiral entitled "The Meaning of Your Profession." You'll find it new and rewarding. Start the New Year right with this AE special-page 17.

There's two sides to every story as everyone knows and if you read about the virtues of working for a smaller company in the December AE, you will want to turn over the coin and learn about the advantages of employment in a larger firm. "Why I Like Working for a Larger Company" begins on page 23.

A new feature, "Professional Profiles," appears "This Month" on page 27. Part of our new, larger 64-page magazine for 1960, PP will tell you about interesting engineers across America.

The matter of unity (the organization of the engineering profession) has been news for years and still remains in the spotlight. This issue presents a 12-page supplement devoted to this all important subject. The section is designed to prepare every AE reader for a questionnaire to be sent to all members of NSPE. Begins on page 28.

The battle against engineering unions and for good engineer-management relations has been waged by NSPE for over twenty years. Read a review of the work accomplished. Page 42.

News "This Month:"

General. On page 6 the headlines are Registered Engineers Rate Higher in ITE Salary Survey; Educator Asks Engineers to Play Important Role; Many Companies to Exhibit at 1960 Atomic Exposition.

Consulting. Questions of corporate practice and retirement for self-employed practitioners are treated in a story dealing with recent Texas court decisions. Page 8. Other headlines: Federal Plan Changed on Competitive Bidding; Lawyer, P.E. Activities Ruled Separate by Bar; Private Practice Upheld in Florida Agency Case.

Government. Of importance here is the story covering a review of recruitment and retention of engineers by the government. Roger W. Jones, chairman of the U. S. Civil Service Commission, recites the facts for the Manpower Utilization Subcommittee of the House. Page 10.

Industry. Another survey, this time by the Midwest College Placement Association, finds that more engineering grads are needed and that salaries are up. Page 13. In other news: A Plant Maintenance & Engineering Show is scheduled for Philadelphia "This Month," and a "New Ideas 1960" industrial conference is set for Chicago in February.

Kenneth E. Trombley

Editor

# Significant Tax Decision in Texas Involves Professions

A recent Federal Court decision in Dallas, Texas, involving a group of physicians is pertinent to the related questions of corporate practice and provision for retirement plans for self-employed professional practitioners in engineering and other professions.

The Texas decision followed the organization of a medical clinic, which operated as an association, taxable as a corporation under Federal tax laws, although the association was not incorporated as such. The doctors control and operate the association, but are compensated on a salary and bonus basis as employees. A retirement plan for the doctor employees is one of the features of the arrangement.

A tax deficiency was assessed against one of the doctors on the ground that he was required to declare as income and pay a tax on his share of the money set aside by the association in a reserve fund, as if he had been a partner. If this position were upheld it would follow that the doctors would have to report as income any money paid on account of their retirement fund. It is because of this latter point that the self-employed professionals have banded together to enact the Keogh-Simpson-Morton-Smathers self-employed retirement bill (H.R. 10).

The district court ruled, however, that the association was in effect acting as a corporation and was entitled to do so even though Texas law forbids the practice of medicine by corporations. "There is, however, no provision in the Texas law which forbids the organization of an association of men in similar terms to those embraced within the articles of incorporation. These doctors prepared for their clinic's assembly and association everything substantially the same as if they had been incorporated under the corporation laws of the state."

The Internal Revenue Code lists corporations and associations in the same tax category, the court said. It added: "The fact that a business institution may have a corporate name or an adopted name as an association presents no ground for a difference in its tax liability where they do and perform similar acts with relation to each other and to the public."

The court concluded that the association was entitled to pay taxes as though it was a corporate body under the laws of the State.

A similar situation and ruling occurred earlier in a Montana case. In that situation the motivating factor in converting a partnership into an association was to obtain employee status necessary for participation in a qualified pension plan. The Internal Revenue Service attempted to tax $976 which had been paid by the association in a retirement plan for one of the doctors. The United States Court of Appeals, 9th Circuit, upheld the doctors' contention that the association was taxable as a corporation and therefore its payment to the pension trust fund was no different than a similar payment by a corporation on behalf of its employees. Consequently, the pension contributions were held to be a deductible expense to the association, although not taxable to the employee beneficiaries until they were distributed.

The Internal Revenue Service has since indicated that it will apply the usual tests "in determining whether a particular organization of doctors or other professional groups has more of the criteria of a corporation than a partnership."

The American Medical Association has declared its approval of the association plan as "within the limits of ethical propriety for physicians to join together as partnerships, associations or other lawful groups provided that the ownership and management of the affairs thereof remains in the hands of licensed physicians." The AMA cautioned its members, however, that the legal and tax involvements of corporations and unincorporated associations are intricate and should be utilized in group practice only if the financial advantages are clearly persuasive and will not interfere with traditional physician-patient relationships, and then only upon the advice of legal and tax counsel.

## Federal Plan Changed On Competitive Bidding

With the assistance of NSPE, a contract calling for aerial mapping and topographic surveying, with a tie-in to U. S. Coast and Geodetic markings, has been changed from a competitive bidding basis to one of negotiation in accordance with professional standards. The "first-order" surveying contract, to be performed for a cabinet-level Federal department, was scheduled to be awarded on a low-bid basis.

Through contact with a departmental spokesman, the NSPE policy position on competitive bidding for engineering services was explained and copies of applicable NSPE policy statements were furnished. As a result of NSPE's efforts, the departmental contracting officers agreed that a contract of the type involved should be awarded on a negotiated basis.

## Lawyer, P.E. Activities Ruled Separate by Bar

May a professional engineer who is also a lawyer practice both professions from the same office, and show both professional designations on the one door, letterhead, business card, etc.?

The Virginia State Bar was asked to state an ethical opinion on this question by an NSPE member who is qualified in both professions. The Virginia Society of Professional Engineers, through its attorney, had a number of meetings with members of the Bar's committee to present the engineers' views. As a result the final opinion modified from earlier drafts which would have ostensibly ruled out use of the same office for both practices.

However, the Bar opinion now declares that it is unethical for the member to engage in dual practice "in such manner as will publicize those dual capacities by the use of a common name plate, doorway listing, calling card, letterhead, by the dual authorship of magazine articles or other published writings, or by other and comparable means."

The opinion should not be construed, the Virginia Bar said, to enjoin separate and unrelated listings when made discreetly and in a manner that does not tend to publicize the individual's dual capacities. The basis for the opinion is the Code of Legal Ethics ruling condemning advertising and solicitation by lawyers. Additional business or professional activities of a lawyer must be kept "scrupulously distinct" so they will not serve as a feeder for the practice of law, the opinion adds.

## Plumbing Contractors Ask Engineers' Aid

The National Association of Plumbing Contractors has called upon consulting engineers and architects to support their resolutions favoring separate bids for mechanical aspects of construction work, and calling attention to the importance of architects and engineers roughing-in accurate dimensions for equipment requiring connections with gas, water, air, steam, etc., and to the difficulties which result from failure to do so.

On the basis of a review of the resolutions by the NSPE Functional Section Executive Committee, Chairman Alfred H. Samborn has advised the Inter-Industry Liaison Committee of NAPA that the Section could not endorse the first resolution in full "because we are of the opinion that specific type projects in certain locations may or may not be applicable to separate mechanical bids because of a given set of conditions. We do not think that endorsement of this resolution at this time, would permit enough flexibility to satisfy every condition that may arise in the different areas of our country."

## Private Practice Upheld In Florida Agency Case

The Florida Engineering Society moved promptly and effectively recently in connection with a reported offer by a State flood control agency to perform engineering services for private drainage districts. The State Society quickly contacted the agency for confirmation of the report, and pointed out that public engineering bodies should not be in competition with private engineering firms.

In reply the agency stated it had never intended to establish itself in competition with private engineering firms, and "such would be contrary both to the established policy of our Governing Board and to the recommendations of the professional members of our staff." Requests for engineering design assistance are referred to engineering consultants by the agency, the FES was told.

Apparently the misunderstanding arose from the newspaper reports of a public meeting following heavy rains in the area. The design criteria of the agency's project facilities in that area and the projected future land use in the entire service area of those facilities were major items of discussion at the meeting. The general agency studies were mistakenly interpreted as competitive with the implementing engineering service provided by private consultants.


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# Jones Says Federal Agencies Lag in Hiring Engineers

The recruitment and retention of engineers, scientists, and technicians will be a continuing problem for many years to come, Roger W. Jones, chairman of the U. S. Civil Service Commission told the Manpower Utilization Subcommittee of the House Committee on Post Office and Civil Service during recent hearings. "Federal agencies have estimated that their manpower requirements in these occupations will continue to increase to 1963 and expect that these requirements will exceed 1958 employment by 25%," Jones said.

Along with this rising demand for engineering and scientific personnel by the Federal Government, however, there is a corresponding increase in the rate at which Federal jobs are rejected by potential employees. Lower Federal salaries appear to be the prime cause of this situation. Jones said the number of engineers and scientists who decline Government jobs because of low salary "continues high." Fifty-three per cent of the 1959 declinations from engineers were for that reason, he noted.

"For the June, 1958, bachelor-degree graduates in engineering and physical science, industry paid an average of from $5600 to $5700. Compared to this, the Federal Government rates are $4490 for the average graduate and $5430 for the superior graduate.

"The average industry rate for the June, 1959, graduate in engineering and scarce-category physical science increased and is estimated at from $5800 to $6200. Against this, Federal Government rates are $4490 for the average graduate and $5430 for the superior graduate. Increase by industry for 1960 graduates with the first degree is estimated roughly at an additional 2% to 4%."

Based on information obtained from Federal agencies, the Commission has been able to trace the per cent of acceptance to offers of appointment and to compare the Federal Government's acceptance rate with the acceptance rate in industry for engineers and scientists, Jones told the Subcommittee. The acceptance rate is defined as the per cent of acceptances to firm offers of appointment. Five years ago, he said, prior to the Commission's raising of the starting salary rates for engineers and certain scientists, the acceptance rate in the Federal Government was only 17 per cent. But by 1956, after more than a year's experience with the increased hiring rates, the acceptance rate increased to 29 per cent, and as of June, 1958, the acceptance rate was 40 per cent as compared to the industry acceptance rate of 46 per cent.

Broken down by engineers on the one hand and physical scientists on the other, the 1958 acceptance rate was 37 per cent for engineers and 49 per cent for physical scientists, he added.

For 1959, however, the acceptance rate decreased in both industry and the Federal Government, but more sharply in the Federal Government, Jones said. "Whereas the industry acceptance rate in 1959 decreased only 3%—from 46% in 1958 to 43% in 1959, the Federal Government acceptance rate has decreased 5%—from 40% in 1958 to 35% in 1959. The decrease is sharper for engineers than for physical scientists. For engineers, the acceptance rate for 1959 is only 31% (a drop of 6% from the 37% in 1958)."

For engineers and certain physical scientists, the good effects of the ten per cent Salary Increase Act of 1958 and the higher-than-minimum starting salary rates seem to have worn off, Jones explained. Of particular significance is the fact that the drop-off in acceptances has occurred in spite of "continued and even intensified recruitment programs, greater emphasis on coordination of recruiting efforts and on cooperation with colleges, paying an increment for qualified graduates, payment of travel and moving expenses to first post of duty, use of paid advertising and of non-profit employment services, and the beneficial effects of the training legislation."

Messrs. Jones and Murray

Discussing the failure of Federal white-collar salary rates to keep pace with industry rates and the consequent unfavorable competitive position of the Government in the labor market for white-collar as compared to blue-collar employees, Jones cited as a typical example the fact that a beginning apprentice in the Naval Ordnance Plant in Charleston, West Virginia, receives a salary of $4,742.40 per year, yet an engineer with a B.S.

*(Continued on page 12)*

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- **Study and analysis of legislative proposals relating to the classification and compensation of Federally-employed engineers.**
- **A Task Force study of means to implement the special pay provisions under the Armed Services Pay Act of 1958 for engineer officers.**

**In addition, other Section activities are concerned with attempts to unionize engineers employed by city governments, a constant scrutiny and evaluation of Federal personnel policies as they relate to engineering personnel, and efforts to stimulate agency policies encouraging registration.**

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## GOVERNMENT

*(Continued from page 10)*

degree enters the same plant with a salary of only $4,490 (or $5,430 if he stood high in his class).

Jones strongly defended what critics have termed "the unwarranted upgrading" of Federal white-collar jobs within recent years, citing as a major cause the increased number of engineers and scientists on the Government's payroll due to significant developments and activities in engineering, scientific and technical fields. For example, the number of Federal employees classified in the engineering group increased from 51,098 in 1947 to 72,395 in 1958—an increase of 42 per cent. For those in the physical science group, the increase was 76 per cent—from 15,362 to 27,006. These figures compare to a total Federal employment increase during this period of only 12.3 per cent.

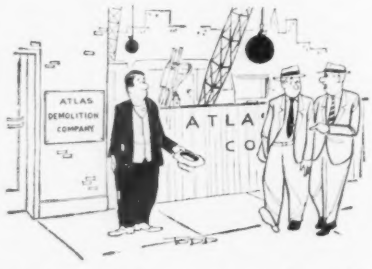
Jones stated that the Commission estimates today that in the Federal service one out of every *ten* workers is in a scientific or technical job. "The increased numbers of engineers and scientists have contributed to the general upward grade movement since the average grade of these employees is higher than for most other occupations," he added.

In Jones' opinion, the inflexibility of the present Classification Act pay plan—the inability to adjust salaries to solve pay problems and serve the legitimate needs of management—has been the single greatest cause of any unwarranted grade creep that may have been occurring. To provide flexibility, Jones urged the adoption of a classified pay plan that will provide: (1) a means for adjusting Federal salary levels promptly as white-collar pay levels change in industry, (2) greater incentives through greater differences in pay between grades, more in keeping with differences in responsibilities, and through provision for higher within-grade pay for the more competent, (3) ability to vary initial salary offers somewhat to be more attractive to the better qualified applicants and otherwise aid recruiting, and (4) a means for meeting special problems, such as recruiting in shortage occupations or in localities where salary levels are exceptionally high.

Jones' recommendations appear to be along the same general line as the plan being drafted by the staff of the House Post Office and Civil Service Committee. According to the latest unofficial information, the committee staff is reported to be giving serious consideration to a plan which would replace the present eighteen classified grades with either eight or ten salary ranges. Congress would establish the minimum and maximum dollar amounts for each range, and the Executive Department would have the responsibility for assigning specific types of positions or employee groups to the respective ranges, based upon the application of yet-to-be devised standards and criteria. It would be within the authority of agency heads to slot employees at a step within the appropriate range, taking into consideration such variable factors as ability, scarcity of supply, comparable salaries for similar work in the same geographic area, needs of the agency, experience, etc.

Such authority would give agency heads the power to set salaries within the minimum and maximum rates of each range, theoretically on an individual basis if necessary. This arrangement, the committee staff believes, will provide adequate flexibility in setting white-collar salaries to meet changing conditions and circumstances, and at the same time will be advantageous in relieving Congress of the political football of a classified pay raise every two years or so.

It is understood that the committee's proposed pay plan will involve some degree of "police" power for the Civil Service Commission over the grades and salaries of classified employees. Such control, in the form of periodic audits, would see to it that the policies and restrictions laid down by Congress, and the Commission's own standards, are adhered to and carried out by the agencies.




**"That's Ed Brown, used to be foreman here until he finished a job in record time—at the wrong address!"**

It has also been reported that the proposed new grade structure contemplates the elimination of the distinction between the so-called "super-grades"—those positions in grades 16, 17 and 18 of the present General Schedule—and the first fifteen grades of the Schedule. Chairman Jones agrees with this line of thinking and further urged Congress to remove the numerical limitations on these upper grades of the Classification Act. "I wish the term (super-grade) and its faulty connotations could be forgotten and never used again," he said.

It is yet too early to determine what the results will be of the House Committee staff study. Those more optimistic believe that the staff's recommendations, with perhaps some further adjustments or modifications, will be introduced as legislation early in the next Congressional session. Others, however, are of the opinion that a major effort still remains—that of "selling" the plan to House Civil Service Committee chairman, Tom Murray, who virtually holds the key to any Classification Act overhaul. Then too, the Administration must be willing to go along with any new ideas that may be presented.

In the meantime, the NSPE Functional Section for Engineers in Government Practice is seriously watching and analyzing all developments. The present outlook for the NSPE-backed Moss-Gubser bill, to provide a separate classification and compensation schedule for professional employees, appears rather bleak. The proposed new plan, at least as far as can be determined at the present time, might, with its provisions for flexibility in setting classified salaries, materially aid the Government in solving its problems of recruiting and retaining adequate numbers of qualified engineers and scientists.

# More Grads Needed, Salaries Up, Midwest Survey Reveals

Of 209 companies recently surveyed, 118 estimate they will need the same number of college graduates in 1960 as were hired in 1959, but sixty-nine companies anticipate a higher need and twenty-two companies a lower need. In technical personnel requirements, 89 per cent of the need was met in 1958. One of the reasons for quotas not being met was the continued high selectivity on the part of the companies.

These findings are part of the Midwest College Placement Association's annual college recruiting survey report, based on returns from 225 companies.

Average salary offers to 1959 graduates were as follows:

| Degree | 1957-58 | 1958-59 | Change |
|---|---|---|---|
| **Technical** | | | |
| B.S. | $469 | $490 | 4.5 |
| M.S. | 521 | 554 | 6.3 |
| Ph.D. | 700 | 747 | 6.7 |
| **Nontechnical** | | | |
| B.A./B.S. | $411 | $429 | 4.4 |
| M.A./M.B.A. | 460 | 490 | 6.5 |

The highest salary offers for B.S. graduates were from the aircraft and parts and research firms ($521) and the lowest from insurance companies ($423). Aircraft and parts also led the industry lists for highest salaries for the M.S. degree ($630) and Ph.D. ($873).

For 1960 the companies expect to pay an average of $499 for B.S. graduates and $437 for B.S. and B.A. nontechnical graduates. But, the survey notes that salary increases usually are higher than the estimates. Last year the companies estimated the 1958-59 average at $478, but it turned out to be $490, a 4.5 per cent increase rather than the 1.9 per cent increase which had been anticipated.

Very few companies cancelled college visits during the previous recruiting year and they anticipate a 5.5 per cent increase in college visits for the next recruiting season. The chemical and allied products industries plan the largest number of college visits (2349), followed by the electronics, electrical machinery and equipment group (1826). Companies recruiting technical personnel made an offer to approximately one out of every five interviewees, compared to one offer for every seven interviewees for nontechnical positions. Technical recruiters on the average made 2.3 job offers for each student hired. Nontechnical recruiters made 1.7 job offers for each student hired.

## Huge Engineering Show Scheduled Jan. 25-28

The largest Plant Maintenance & Engineering Show in the 11-year history of the exposition will take place at Convention Hall, Philadelphia, January 25-28. Exhibit space, which will cover five acres, will be twenty per cent greater than last year, according to Clapp & Poliak, Inc., New York, the exposition management.

Four hundred companies will exhibit and about 20,000 visitors are expected from some thirty countries. The show is one of the three largest annual industrial expositions in the country.

## "New Ideas 1960"—Theme Of Industrial Conference

A wide range of reports and forecasts based on the theme, "New Ideas 1960," will be presented at the fifteenth Industrial Management Engineering Conference to be held at Illinois Institute of Technology, February 5 and 6.

The conference will cover product design, manufacturing of quality products, planning for profit, perfecting production methods, materials handling, and practical applications of operations research.

Principal speakers will be John M. Allderige, associate professor, industrial and engineering administration at Cornell University; Warren E. Alberts, vice president of industrial engineering, United Air Lines, and James W. Bannon, partner in Booz, Allen & Hamilton, management consulting firm.

The conference is sponsored by four Illinois Tech units—industrial engineering department, Institute of Design, National Center of Education and Research in Equipment Policy, and engineering economics division of Armour Research Foundation.

All sessions will be in the Metallurgical-Chemical Engineering bulding, 10 W. 33rd St., on the IIT campus.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# Western Electric, Others Encourage P.E. Registration

The Western Electric Company has informed its engineers that it encourages their registration, which "enhances recognition of our engineering organization by the public, and makes available to the individual the opportunity to become a member of NSPE, an organization which does much to increase public recognition of engineering as a profession."

The company statement is included in a series of questions and answers related to company policies in connection with the forthcoming vote of Western Electric engineers on union representation. In other portions of the Q&A sheet, the company explains its position on engineer-management communications, checks on administration of company policy, salary administration and professional society participation. On the latter point, the statement says Western Electric engineers are encouraged to join and be active in the professional societies, but the individual should pay the relatively modest membership fees as an expression of professional self-development.

### Other Registration News

The Ohio Power Company, an electric utility, automatically gives its engineers a $300 per year pay raise when they pass the professional engineers' examination and obtain their state license.

The British Columbia Power Commission now requires registration as a condition of employment for employees involved in the practice of engineering, and as a condition for obtaining or retaining the job title "Engineer," within the organization. Under a policy which became effective in September, employees engaged in professional engineering (except those below Grade II) have twenty-four months to apply for registration. Those engaged as trainee engineers or engineers in Grade I have six months to apply for E.I.T. status. Failure to comply in either case may constitute grounds for termination of service. Those hired before September 1st were given three months to apply for the P.E. or E.I.T. certificate. Those who are unable to secure registration by September 1, 1961, will lose the job title, "Engineer," and will be reclassified by title and pay range, which may be lower than the engineering position formerly held.

The reclassified positions "shall not be perpetuated beyond the tenure of the incumbent concerned."

DuPont's engineering department "specifically encourages registration, particularly in the state in which the engineer is working," it is pointed out in an article on registration in the *DuPont Engineering News* in November.

## Surveying License Not Needed by P.E.

A professional engineer and land surveyor, duly registered by the State of Missouri, is not required to obtain a city license to perform surveying work in St. Louis as a private practitioner, the St. Louis Court of Appeals has recently ruled. The decision turned primarily on the fact that the occupation of land surveying is not specifically listed in the City Charter as being subject to a license tax, and therefore a license is not required for such occupation.

The case arose when the plaintiff applied for a license to do surveying work within the city limits of St. Louis, and was told that he had to be a resident of the city, and that the license must be obtained from the mayor. When he later applied to the mayor's office for a license, it was denied him for the sole reason that he was not a resident of St. Louis. The plaintiff claimed the refusal to be discriminatory and then filed suit for a declaratory judgment in order to settle the controversy.

After hearing all the evidence, the court concluded that the city officials had misconstrued the city surveyor license laws which, it was pointed out, pertain only to licenses for individuals appointed by the mayor as city surveyors. According to city law, the mayor is authorized to appoint any number of civil engineers as city surveyors for a term of four years, and in order to obtain a surveyor's license, an applicant must show that he is a legally appointed city surveyor.

But, the court noted, the plaintiff was interested in obtaining a license to perform surveying work as a private practitioner and was not desirous of being appointed to the public office of city surveyor. The city officials erred in interpreting the laws to mean that the business of surveying within the limits of the City of St. Louis was limited to those appointed as city surveyors. As a registered engineer and land surveyor, plaintiff "has the right to engage in the practice of land surveying throughout the State of Missouri." The city laws pertaining to the licensing of surveyors "relate solely to the appointive office of city surveyor and no license is required to pursue the occupation or business of surveying as a private practitioner."

# Strictly Business

***Personalities*** . . . The appointment of **Irving P. Magasiny** as director of engineering of **Schaevitz Engineering**, Pennsauken, N.J., has been announced . . . **William M. Robinson** has been appointed chief engineer of paper and film capacitors and pulse-networks for **Cornell-Dubilier Electric Corporation**, and will make his headquarters in New Bedford, Mass. . . . **David D. Walker** has been appointed assistant chief engineer of the **Erickson Tool Company,** Solon, Ohio . . . **Benjamin S. Bernhard** has been appointed to the position of director of research and development engineering for the New Britain (Conn.) division of **The American Hardware Corporation** . . . **Dr. William A. Hamor**, senior director of research for the **Mellon Institute**, Pittsburgh, Pa., retired on December 31 after forty-five years at the Institute . . . **Howard W. Butterweck** has opened a consulting office in Lakewood, Colo., specializing in electrical lighting, power and heating . . . **Eugene M. Stone**, president of the **Empire Petroleum Company**, Denver, Colo., has been elected chairman of the board of **The Asphalt Institute**, College Park, Md.

Mr. Magasiny

**John E. Schmitz** has been named general manager and chief engineer of the recently formed **Chemical Division, Electronic Production & Development, Inc.,** Hawthorne, Calif. . . . **Sid Shapiro** has been promoted to vice president of **Tenney Engineering, Inc.,** Union, N.J. . . . The appointment of **Dr. John F. O'Donnell** as director of commercial development has been announced by **Gordon P. Hungerford**, vice president-research and engineering of **Kordite Corporation**, Macedon, N.Y. . . . Personnel shifts in the engineering department at **Levinthal Electronic Products**, subsidiary of **Radiation Inc.**, Palo Alto, Calif., have been announced. **Albert J. Morris** has been named vice president-engineering. He was formerly vice president and chief engineer. The post of chief engineer for the firm has been filled by **Harry G. Heard . . . Farris W. Smith** has been appointed as design and development engineer for the **L.A.B. Corporation**, Skaneateles, N.Y. . . . **Joseph J. Quinn, Jr.**, has been promoted to the position of vice president of **Bowen Engineering, Inc.,** North Branch, N.J.

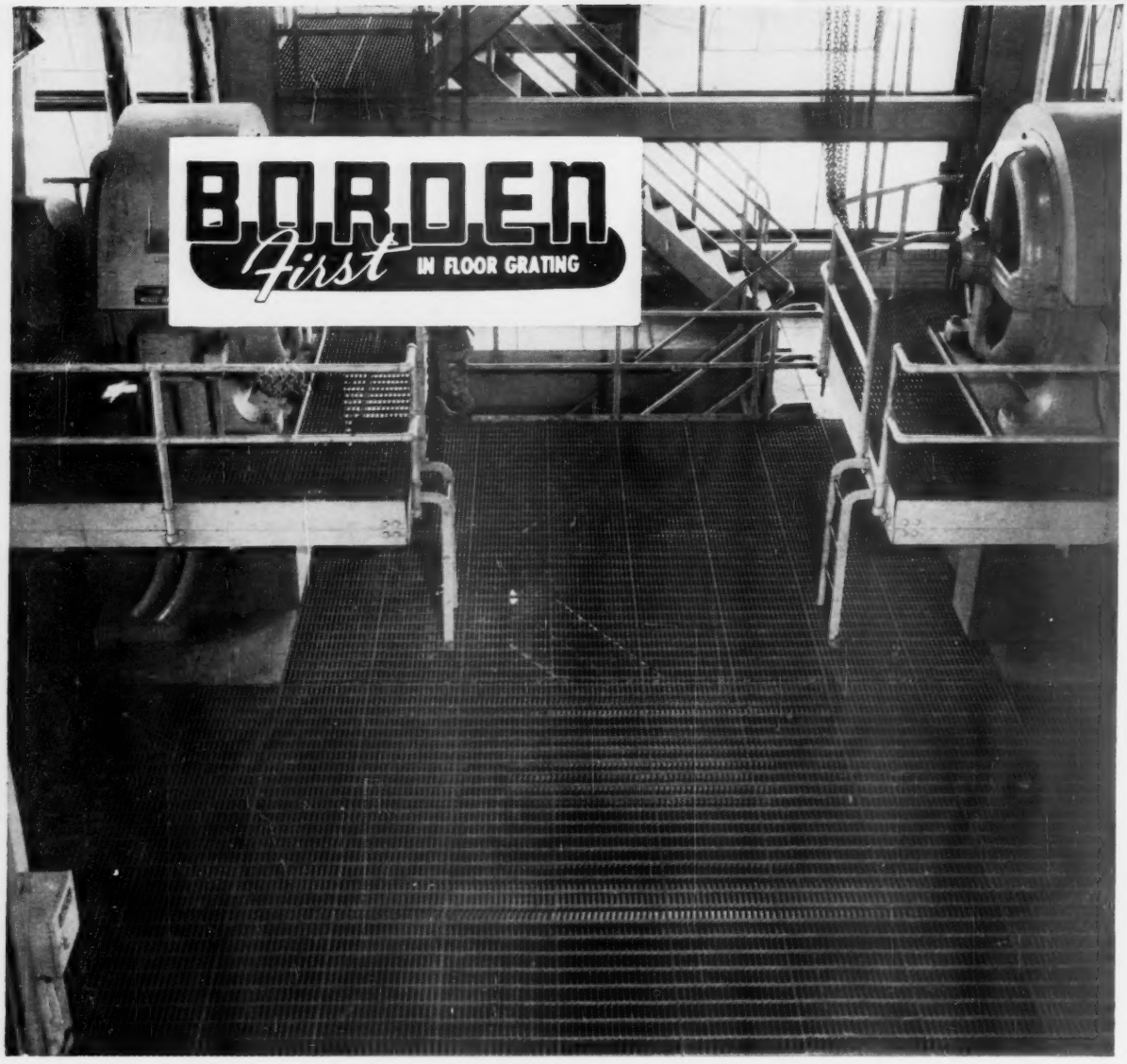
Mr. O'Donnell

**Royal Industries, Inc.,** Beverly Hills, Calif., has announced the appointment of **Harry Houdyshell** as chief engineer for the firm . . . The appointment of **Elwyn H. Pfaender** as sales representative for cement-asbestos board products has been announced by **Union Asbestos & Rubber Company,** Fibrous Products Division, Bloomington, Ill. . . . **Harold J. Borneman** has been placed in charge of the engineering department of **Clark Equipment Company's** Brown Trailer Division, Michigan City, Ind. . . . **McDonald D. Weinert** has resigned as planning engineer for the Texas State Board of Water Engineers . . . **Charles Navoichick** has joined the engineering staff of **Telex's** Systems and Special Products Division, St. Paul, Minn., as a senior systems engineer . . . **Charles J. Geiser** has been named chief contract engineer at **Republic Flow Meters Company,** a subsidiary of **Rockwell Manufacturing Company**, Chicago, Ill. . . . The appointment of **Carl J. Gustafsson** as engineering manager of the gear design department for **Mack Trucks, Inc.,** Plainfield, N.J., has been announced by **I. G. Detra**, executive engineer.

Mr. Borneman

The election of **Robert A. Hitch** as vice president of engineering, research and development for the **Highway Trailer Company,** New York, N.Y., has been announced . . . **Robert V. Mourer** has been named district service engineer in the Detroit district of **The Babcock & Wilcox Company's** Boiler Division, it has been announced by **E. A. Kazmierski**, manager of field engineering . . . The appointment of **James P. Malmstrom** as assistant to the president of **Koehler Aircraft Manufacturing Company,** Dayton, Ohio, has been announced . . . **Richard F. Brackin**, chief gas truck engineer of **Yale Materials Handling Division, The Yale & Towne Manufacturing Company,** Philadelphia, Pa., has been promoted to assistant director of engineering . . . **Dr. Gurdon M. Butler, Jr.,** has been appointed director of research for **Gladding, McBean & Company,** Los Angeles, Calif. . . . **Austin Herbst** has been appointed senior engineer in the solars methods department of **Hoffman Electronics Corporation's** Semiconductor Division, El Monte, Calif. . . . **Col. Ralph F. Gallogly** has been named general manager of the Defense Operations Division of the **M & T Company,** Philadelphia, Pa.

Mr. Malmstrom

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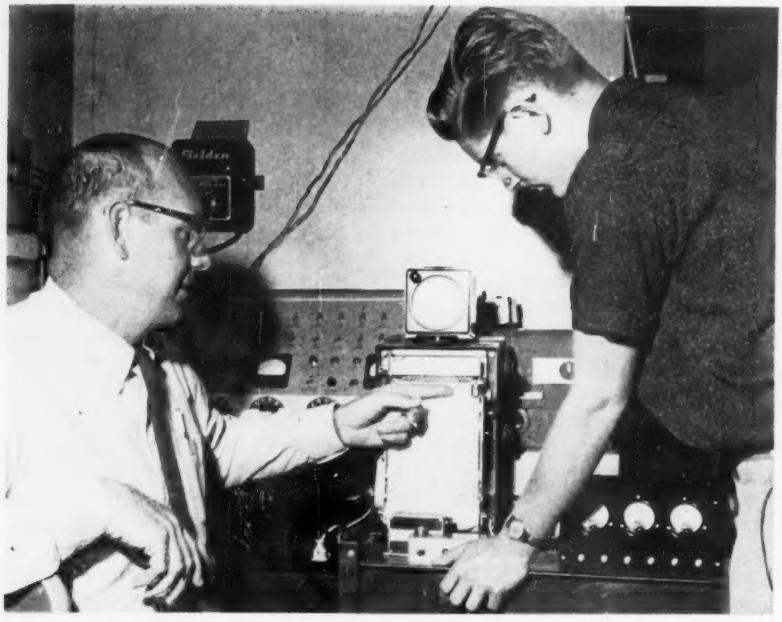
# The Meaning of Your Profession

By
**VICE ADMIRAL H. G. RICKOVER**
*Chief, Naval Reactor's Branch*
*Division of Reactor Development*
*U. S. Atomic Energy Commission*



Teacher and student. The author says that the word "profession" should be reserved for vocations maintaining the traditional standards of the well-established "learned" professions.

Part I

TO PRACTICE a profession one must have acquired mastery of an academic discipline as well as a technique for applying this special knowledge to the problems of everyday life. A profession is therefore intellectual in content, practical in application.

The first definiton of the term I could find goes back to the time of the Renaissance when Europe's universities became in essence training schools for professional men. The Oxford English Dictionary of 1541 says that a profession is "a vocation in which a professed knowledge of some department of learning or science is used in its application to the affairs of others."

Traditionally, professions have been held in esteem because their esoteric content has been impressive—their usefulness patent to everyone; because of all callings, they required the longest and most costly period of preparation, and because they were usually practiced by persons of above average intelligence, education and character.

Until well into the nineteenth century, only members of the three "learned" professions, that is theology, law and medicine, and of university faculties were called professional men. But as human knowledge expanded, new fields of learning developed which could be turned to practical use through new professions or through subdivisions of old professions. Engineering is one of the newer professions.

Engineering had been a skilled craft since remote antiquity and necessarily remained a craft as long as no other sources of power ex-

*Editor's Note:*

**Much of the material in this article can be found in the Admiral's latest book entitled *Education and Freedom* published by E. P. Dutton & Co., New York, N. Y., Copyright, 1959. Royalties from the book and payments for speeches and articles are donated by the author to various charitable organizations.**

Towards the physician, the layman is suitably humble in matters medical but this is not so, as yet, towards the engineer.

cept human and animal muscle, wind, and water were known. It developed from a craft into a profession when it acquired a body of systematic knowledge, that is, when scientific advances opened up vast new and complex sources of energy in nature for the use and convenience of man. Today, we have a body of organized knowledge and procedure which—as you well know—requires a long course of professional study. In consequence, engineering now has professional status in most civilized countries.

The term "profession" today has a well-defined and widely accepted meaning. One might therefore expect that no vocation would lay claim to this appellation unless it had in fact become an intellectual pursuit monopolizing some department of higher learning. However, we live in a time of growing equalitarianism in all spheres of life. This has brought about a gradual blurring of the distinction between crafts, trades, and professions. Similarly, the indiscriminate granting of diplomas and academic degrees has tended to obliterate the traditional distinction between vocational training and higher education. Many people engaged in useful but nonintellectual or routine activities now call themselves professionals.

For example, you can attend a university and study the new academic discipline of "cosmetology," obtaining in due course a bachelor's degree in techniques for beautifying the ladies—God bless them. This is a thoroughly worthy undertaking and I am all for it. But does it become a profession merely because interested parties have endowed a chair in cosmetology?

Recently I heard of a university which offers courses in television and radio advertising and in gourmet cookery and which has now added to these pseudoacademic subjects a four-year course in trailer manufacturing, dealership, and trailer park operations. Upon completion of the course, students are awarded a B. S. They may also take postgraduate work in this fascinating field of higher learning and eventually receive a master's degree, in this way presumably becoming members of a brand-new "learned" profession.

The traditional hallmark of the professional person—his doctorate—may now be obtained by writing theses on subjects such as "Optimum Window Area for a Classroom of Twenty-Five Pupils in the Junior High Schools." A doctoral thesis, you remember, is supposed to climax advanced study in a academic discipline by making a contribution through original research in the subject!

These are examples of what some may consider merely a harmless aberration: one which happens because people like to acquire the symbols of status yet hate to do the hard work which the symbols are supposed to represent. But to my mind it is something more serious. Are we not all extremely indignant—and justly so—when a certain foreign power uses good old words like "freedom" or "democracy" and twists them around to mean their opposites, thus fooling some people into thinking they are what they are not?

One may even wonder whether institutions which mix salesmanship with science, fly-casting with philosophy, and homemaking with history can properly be called "universities"—a term which has a more restrictive meaning, as you will discover if you look it up in Webster.

Indiscriminate appropriation of words which traditionally have meant excellence of some sort is stated to be democratic. I myself cannot accept this view. Carried to its logical conclusion, each American baby ought then to be supplied at birth with a combination birth certificate, high school diploma, B. A. and Ph. D.! Actually, we are not consistent in this

Resistance to lay interference is easier when a professional man, such as a lawyer with his own firm, charges a fee rather than working for a salary.

matter. We do not consider it "undemocratic" to respect and reward excellence in athletics, in art, or in business. It would, therefore, seem only just to reserve the honored word "profession" for vocations maintaining the traditional standards of the well-established "learned" professions.

These standards apply both to the content of a profession and its practice. The intellectual content of a profession, the field of knowledge it monopolizes, must of course be mastered before a man may begin to call himself a professional person. But it is not something learned once and for all in a prescribed course of study. Knowledge increases and a man must keep up with it, so he is never done with learning. In fact, he himself is obligated to carry forward the knowledge on which his profession is based and to insure that it is handed down to new members. In a very intimate sense, his own specialty is a professional man's personal concern and responsibility. Its continued advance can be brought about only by the efforts of present members of the profession who themselves are indebted to the contributions of past members. A professional man who cannot make original contributions to his field of knowledge, can at least enhance the prestige or standards of his profession. Above all, he can and must support the institutions which train future colleagues.

If professional standards of competence are demanding, so are the standards concerned with professional behavior—with the practicing of a profession. Traditionally, the professional man follows certain tacit or explicit rules of conduct which vary in detail as between different professions. Basic to all of them, however, are two rules: first, the obligation to reject lay direction in the performance of professional work—that is the duty to maintain professional independence; and second, the obligation to use professional knowledge and techniques solely for the benefit of their clients. A clear understanding of these two rules of professional ethics is particularly important for members of the newer professions.

Since engineering is a newcomer among the "learned" professions, its ideals and principles are not yet firmly fixed nor are they adequately stressed in engineering education. For this reason I would like to discuss the standards of professional practice in general and their application to engineering in particular.

As regards the obligation to maintain professional independence, Flexner—himself an outstanding expert on the nature of professions—remarked: "The essence of . . . professions resides in the application of free, resourceful, unhampered intelligence to the comprehension of problems."

Service ceases to be professional if it has in any way been dictated by the client or employer. The role of the professional man in society is to lend his special knowledge, his well-trained intellect, and his dispassionate habit of visualizing problems in terms of fundamental principles to whatever specific task is entrusted to him. Professional independence is not a special privilege but rather an inner necessity for the true professional man, and a safeguard for his employers and the general public. Without it, he negates everything that makes him a professional person and becomes at best a routine technician or hired hand, at worst a hack.

To maintain this freedom, the professional man may have to refuse a lucrative case or relinquish a position with a good salary. In one profession — theology — independence has at times cost the professional his very life. Clergymen of all faiths have shown great courage in resisting the attempts of ruthless governments to dictate to them in matters of religious belief and church administration. These are part of the clergyman's

profession—if I may use the term—in which he cannot brook lay control.

Resistance to lay interference is of course easier when a professional man charges fees than when he works for a salary. For this reason, English barristers are professionally prohibited from becoming salaried employees; they must take each case for a separate fee, even if it is tacitly understood that they will accept *all* the cases of a particular client. British solicitors are under no such constraint, but then it is the barristers who are the top men in the legal profession and it is from their ranks that English judges are chosen.

Of the various professions which are indispensable in a civilized modern society, that of members of university faculties ranks high in importance. Professors and researchers are salaried professionals: in most European and in some American universities, they are paid by the state. The professional independence of these persons has long been recognized as vital to a nation's intellectual growth. I am speaking, of course, of the principle of academic freedom which is the term applied to the professional freedom of the scholar and the scientist to pursue knowledge wherever it may lead him—even if it leads to conclusions which are politically unpopular. Even so autocratic a country as Prussia understood that without academic freedom her universities would not be able to perform the scientific functions expected of them. Thus we have the strange phenomenon of an express grant of academic freedom in the Prussian constitution of 1850—the only such incidence I have encountered. Sometimes authoritarian governments can recognize the inner need of the scholar for this freedom more readily than democracies where egalitarian thinking may consider this to be an unwarranted special privilege.

Shown is Admiral Rickover aboard the famed USS *Nautilus*.

We have evidence that Russian scholars and scientists are given some academic freedom in strictly limited fields which the government considers politically neutral. Since the Russian people as a whole enjoy no political, economic or social liberties, even such limited academic freedom apparently suffices to spur the creative abilities of their scientists and engineers. Freedom is a relative thing. The men who push beyond the frontiers of the known are seldom interested in any other freedom than their own driving need. Despite many restrictions, Renaissance scholars, for example, were able to launch a scientific revolution, highly destructive of much that had been implicitly believed for a thousand years and, therefore, bitterly resisted by the authorities. A famous Bolognese philosopher summed up how it was done: "We must speak as the many do, we must think as the few."

Each new profession must fight to gain this freedom for itself. Unless it wins this fight it will not be a real profession. Engineers must be particularly careful not to lose their recently acquired professional status inadvertently. This will usually happen when they accept managerial positions. In such positions the engineer-manager becomes a member of an administrative hierarchy where he must submit to lay superiors. His engineering knowledge then becomes incidental, on a par, let us say, with proficiency in a useful foreign language. He functions as an administrator and is no longer a professional engineer.

Even when he takes a straight engineering position in a corporate or governmental organization he has no guarantee that his professional status will be respected. For the engineer often has more difficulty maintaining his professional independence than say a physician employed by the same organization. Yet both are experts in their respective fields—both are professionals. The difference lies in the determination of the medical profession to brook no lay interference. The engineering profession does not resist lay interference with equal ardor. Towards the physician, the layman is suitably humble in matters medical. Not so, as yet, towards the engineer. This is something for you to ponder and to work on, so that eventually your status may become as unquestioned as the doctor's.

Officials in governmental and corporate complexes wield power commensurate with their rank in the organization. They are accustomed to directing the activities of subordinates and they are convinced that their own rank is clear evidence of their superiority over those with less rank. But professional personnel are in a sense outsiders to the organizational hierarchy. Only rarely do their positions accurately reflect their professional abilities. There is, in truth, no such thing as rank among professionals. Each is "master of his fate;" he stands alone, and by his performance demonstrates his own worth; no organization can *give* him his true rating.

**(To be continued)**

# FROM WASHINGTON

BY
MILTON F. LUNCH,
*N.S.P.E.'s Legislative Counsel*

## RUMINATIONS ON 1960

THE dominant factor in chewing over what 1960 may hold in store for the engineering profession is that it is an election year. On top of that it is a presidential election year, with both parties rather "wide open" as to candidates for the two top political offices of the nation, although the entries in the Republican Presidential Sweepstakes are only two compared to some five or six in the case of the Democrats. Nevertheless, the fact that there is competition to any degree will have significant bearings on political party positions and congressional actions in the year ahead.

◄ Frank Pace, Jr.

In view of the emphasis on the national political conventions of midsummer and the subsequent campaigning, coupled with the anticipated short session of Congress, most observers believe that 1960 will be significant more for groundwork and trend than for actual policy decision or legislative action on major issues. There are a number of items of evidence to the effect that 1960 will show mainly jockeying for political position and the shooting up of an unusually large number of trial balloons. Most of the major areas involved in this delicate process will be of particular significance to the engineering profession.

One of the important groundwork items which may emerge shortly is the much-delayed Presidential National Goals Commission. The president has found considerable difficulty in getting the kind of national leaders he wants to serve on this body and there has been difficulty in obtaining the financing for the operation of the Goals Commission. Now it is reported that Arthur F. Burns, chairman of the Council of Economic Advisers from 1953 to 1956, and now president of the National Bureau of Economic Research, has agreed to become the chairman. The unofficial report further has it that Frank Pace, Jr., former Secretary of the Army and now head of General Dynamics Corporation, will serve as vice chairman.

The objective of the Goals Commission will apparently be something like that of the group appointed by President Hoover to study long-range social trends and their impact on the nation's life and economy. The study is to be above the immediate and present problems of today and the near future; rather it is to take the "long look" at what is happening to the national interest, whether the trends are in the right direction and what basic over-all national policies should be revised in the light of the findings. The President has described his purpose as seeking "a group of selfless, able and devoted individuals, outside of Government, (who) could effectively participate in making the necessary appraisal of the potentials of our future. The result would be the establishment of national goals that would not only spur us on to our finest efforts, but would meet the stern test of practicality."

Arthur F. Burns ►

There can be no doubt about the high priority of engineering-scientific aspects in such a study, and, necessarily, the role of the people who compose the technological component of society. Some of the specifics of those considerations are indicated in the following areas of concern:

DEFENSE—One of the major debates of 1960 should be a continuation of some basic and general disagreements about the extent and type of defense spending. Majority Leader Lyndon Johnson of Texas, chairman of the Senate Aeronautical and Space Sciences Committee, has continued to lash at the Administration for its lack of "decisive action" to meet

the Russian competition. Senator Johnson, in what is regarded as a major tip-off to a 1960 legislative battle, said recently "that the whole field of space needs a single, 'accountable' leader with the powers to accomplish." He added that "we thought we had done this in the Space Act when we put the President in charge of it. If the Executive Department cannot or will not meet this responsibility, then Congress must act. America cannot sit out 1960 and wait to start up again somewhere down the road."

In a related development, The Democratic Advisory Council approved a report of its Science and Technology Committee urging a technically-oriented "National Peace Agency." Trevor Gardner, former Assistant Air Force Secretary for Research and Development, and now an industrial leader, spoke for the Committee in stating the purpose of the proposed new peace agency would be to fill an "organizational gap in our Government" and redirect scientific and technical energies from their former search for bigger and better weapons. Gardner, a noted engineer, said the Committee felt that the key to disarmament and peace might be found by scientists themselves by developing test detecting methods on which an effective inspection system might be based. The proposed national agency, he said, would explore the technical possibilities of inspection systems, develop new arms limitation concepts, and become a strong factor in disarmament planning.

All in all, however, few expect any real basic changes in defense planning or spending in the next year. Discussions of the type indicated by Senator Johnson and Gardner, however, do point significantly toward a possible major overhaul of defense concepts after the 1960 election.

AID TO EDUCATION—A reasonable assumption for 1960 is that Congress may finally enact some form of financial assistance for elementary and secondary school construction, but not much more. The Democratic Advisory Council's recent 1960 "platform" suggests a Federal college scholarship and loan program, in addition, plus a program of Federal aid to colleges. Senator Johnson also is on record separately for a huge program of Federal insurance of private loans to college students. The Johnson plan has a fair chance of enactment, but it is unlikely that direct scholarships will be provided in the next session, despite the recent disclosure that freshmen engineering enrollment dropped 4.7 per cent this past fall from the previous year. This issue, more likely, will be a predominant one in the succeeding Congress when the entire National Defense Education Act will be up for extension. Construction grants for colleges came close to passing in the previous session and may get through this time. The Republican Committee on Program and Progress is partly for such a bill, judging from their recent statement that such Federal grants are "justified in some instances."

TAXES—Always on top of the priority list is the question of the national tax structure. House Ways and Means Committee Chairman Wilbur D. Mills of Arkansas has been making real tax news during the Congressional recess by undertaking a comprehensive study of the basic tax concepts now in effect. Through pre-studies and hearings the Committee is exploring some possible radical revisions of the tax system. One of the most provocative suggestions advanced (and which is not outside the realm of possibility) is to abolish all deductions, e.g., charitable contributions, interest, medical payments, etc., and compensate by increasing the personal exemption

◄ Congressman W. D. Mills

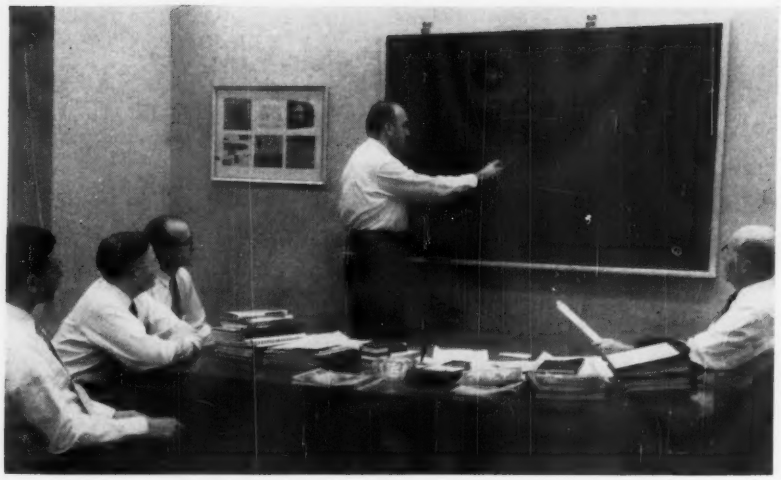
from $600 to some higher figure. Such a move will be resisted stoutly to say the least, by persons and organizations which stand to benefit from the permissible deductions under the present system. On the other hand, many persons feel that the present system is so cumbersome and unfair in many instances that it would be better for the government and the taxpayers to simplify the system.

The proposal has special significance for self-employed supporters of the Keogh-Simpson retirement legislation. If the suggestion were enacted it would remove the justification for the Keogh-Simpson bill inasmuch as the present contributions of employers for the retirement benefit of their employees would be construed as income to the employee and subject to tax. Again, however, the Mills study is regarded as groundwork for later decision—certainly it would be astounding for Congress to undertake such a drastic move in an election year.

INDUSTRIAL RELATIONS—The injunction in the steel strike expires in mid-January. If the strike then resumes the President will call for some form of legislative action. This could kick off the top item of the session by opening the door to further revisions in the national emergency provisions of the Taft-Hartley Act. In turn, as in the case of the labor reform bill, other provisions of the national labor law might be reconsidered. If this should develop, the engineering profession will need to be on its toes to prevent amendments harmful to the separate interests of professional engineers and to advance amendments desired by the profession, such as the Kearns Bill to clarify the legal status of nonbargaining sounding boards of engineering personnel.

ENGINEERS IN THE FEDERAL GOVERNMENT—For a comprehensive special analysis of the outlook on this important subject see the story on page 10.

The Second Session of the 86th Congress promises to be interesting and of high importance in the long run, although the tangible evidence in terms of enactments may be hard to find. Those in the legislative field know, however, that more often than not, the background-groundwork deliberations hold the key to eventual results.



◄ Engineers in large companies have a chance to contribute and share in the exchange of ideas and knowledge in staff meetings such as this one. When an engineer in a large company encounters a problem he has many resources to call upon to assist him in solving it.

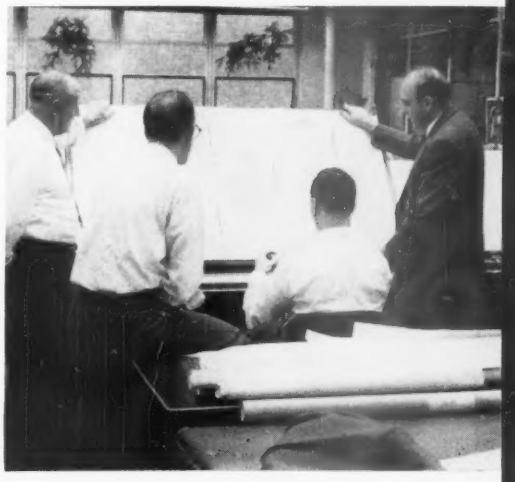
Large companies usually encourage their engineers to participate in the activities of professional and technical engineering societies. Most large companies provide time off for such meetings and, sometimes, underwrite the expense involved. ▼

# Why I Like Working for A Larger Company

By
**THOMAS M. LINVILLE, P.E.**

*Manager, Research Operation Department,*
*General Electric Research Laboratory*

Engineers in large companies usually work in small autonomous components of the parent organization. The variety and diversity of these components gives the engineer many avenues in which to channel his talents. ▼



Why do I prefer to work for a large company? Because, to put it briefly, I believe that the large operation provides exceptional opportunities for the engineer to use his talents and realize satisfaction in his work. Of course, use of talent and career satisfaction are intensely personal; and many of the elements which contribute to them will only be found for some men in a small organization, and for others in a large one. There are a number of elements, however, for which the large company seems to me to be in an outstanding position.

*Bigness Means a Broad Span of Opportunity.* Let me start by explaining what I mean by a large company. For the purpose of this discussion I mean this: a company which numbers its professional engineering force in hundreds or thousands, because of the *diversity, volume,* and *rate of change* of the engineering work to be done. In practice, such a company is usually characterized by costly, complex, products having a very high technological content and by business objectives which are very closely geared to technological growth and progress. (Please note that high cost and complexity of product may exist even in the case of high-volume low-unit-cost output such as chemicals or lamps, for instance.)

Normally, advancement opportunities for an engineer in industry are governed by three major factors: (1) his ability; (2) his willingness to use this ability, and (3) the scope and depth of the engineering work done by the company of his choice. Assuming that an engineer has both the ability and the desire to use it, then the third factor—the nature of the engineering work load—becomes

## Availability of Materials

## Opportunities for Study

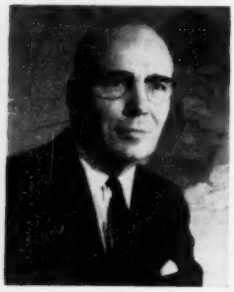
highly important in his chances for advancement and satisfaction in an industrial engineering career. The large company would certainly seem to provide a very broad spectrum of engineering challenge. Its engineering work often embraces a host of the engineering technologies, and, in addition, requires research and engineering laboratory activities which supply new knowledge so that each new job will have opportunities better than the last. In this connection it is important to remember that the work of investigation and application in many fields today requires facilities which are extraordinarily costly. Many organizations are not able to provide such facilities or to obtain orders of sufficient size to include such development effort. Therefore, the engineer who wishes to work in those fields has the greatest probability within a large company.

General Electric is a good example in its field. At General Electric the engineering challenges are about the largest imaginable. The company builds heavy apparatus, power systems equipment, industrial process systems, and communications, electronic, atomic and defense systems. In addition, it makes industrial and consumer goods. One of the criteria used to determine whether or not General Electric should be in a particular business is the uniqueness of the research and engineering contribution which it can make. The advantages to an engineer of such complex, big scale, pioneering engineering work are obvious.

*An Engineer Can Pursue His Particular Interests.* The young engineer who decides to join a large company has a multitude of avenues in which he may channel his special interests and engineering abilities. Often when joining a large company, he enters an orientation program where he becomes familiar with the company's opera-

## About This Series . . .

This is the second of a two-part series on the pros and cons of employment advantages in smaller industry versus those of large companies. This month's article, "Why I Like Working for a Larger Company" is written by Thomas M. Linville, P.E., manager of the Research Operation Department of General Electric Research Laboratory at Schenectady, N.Y. The other side of the story, "Why I Like Working for a Smaller Company" appeared in the December issue of AMERICAN ENGINEER.

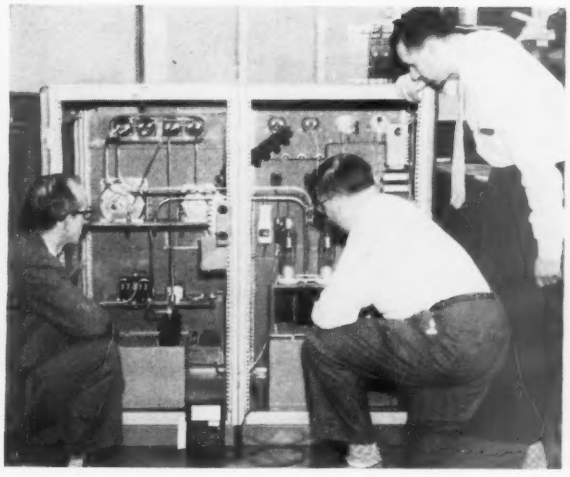


Mr. Linville

Mr. Linville was NSPE Director in 1953 and was president of the New York State Society in 1955. Currently a member of the NSPE Inter-Society Relations Committee, Mr. Linville has been a Director of AIEE and EJC. He is a graduate of the University of Virginia with the degree of electrical engineer. He later attended the Advanced Management Program at Harvard University and has been a visiting lecturer at various educational institutions. He has been active in the fields of design and development of motors and control systems, engineering administration, management consultation, and engineering education. He serves on several commissions on economic and education development for the United States and the State of New York, and is chairman of the Development Council for Science of Rensselaer Polytechnic Institute.

## Working with Top Talent

## Diversity of Projects



tions before accepting his first real job. And if his original choice is unsuitable, or if he discovers and develops new abilities in another special field, he has the opportunity to move into these other areas. In contrast, the engineer who joins a company which is not so diversified is usually faced with one, or at the most two or three, specialized areas in which he may make use of his talents. If he wants to move into new or different specialized areas, then he must usually find employment in another company.

*Associates are Helpful and Stimulating.* The working associations in a large company also can play a very special part in the development of the engineer. An engineer in a large company has the chance for contact with many people who are leaders in important fields of engineering. He cannot help but become acquainted with excellence of the highest order of the kind displayed in his associates. He has staff meetings and discussions which give him a chance to contribute and share in the exchange of ideas and knowledge among experts.

When an engineer in a large company encounters a problem, he has many resources to call upon to assist him in solving it. Often he can spell the solution of his problem by consulting with another engineer who has specialized knowledge in a particular field. Such specialized knowledge is available on a broad scale in a large company; this is, of course, a plus over and above the access to company laboratory, library, data center and research facilities.

*Industry Provides Exceptional Specialized Education Opportunities.* In the twentieth century technological world, an engineer must be a highly adaptable individual. Today's engineer steps from the college campus into a rapidly changing, expanding field. During his career, many important engineering concepts are certain to undergo radical change. His formal education can hardly anticipate all of these changes; it must be more concerned with providing the student with a broad solid base of knowledge on which he can build to meet the challenges of technological change.

It is obvious then that the engineer must learn about and adapt to these new and changing ideas while he is on the job. As a consequence, the type of industrial organization for which he works will have a tremendous bearing on his future development. I am convinced that the large company is in an excellent position to offer many and varied opportunities for the engineer to train and develop himself in these specialized fields so necessary in modern technology.

*Some Popular Concepts Brought Up-to-Date.* The individual IS in the spotlight. Nearly everyone has heard the old refrain that bigness breeds conformity and masses of red tape in which the individual is lost. A great deal of this folklore arises from a lack of understanding of the organization of the country's large industrial enterprises. The trend in organization and management has been towards decentralization, and today many of the large companies are made up of highly autonomous components, some big, some small. This practice of decentralization gives engineers in large companies an excellent opportunity to work into positions of responsibility and administration.

Certainly this is true at General Electric. Here we have over a hundred separate components, each running its own show, concerned

with products ranging from washing machines to atomic energy. Each of these components has its own general manager who is the equivalent, with respect to many business decisions, to the president of a separate company in his industry. Under him are the managers of engineering, manufacturing, and marketing who operate on a level comparable to vice presidents in separate enterprises. The structure of these separate components pretty well wipes out the concept that engineers are "swallowed up" or "lost" in the bigness of a big company. There isn't "always somebody above you," as the popular notion has it. In many companies your job is laid out for you and for you alone.

A company will take substantial risks rather than stifle initiative to act-on-your-own. In fact, big industrial organizations make a determined effort to avoid having any engineering talent "lost" or improperly utilized. They are as vitally dependent upon progressive engineering as the individual engineer is upon having his particular talents recognized.

AFTER all, a business organization consists of a group of people pursuing common objectives through co-operative effort in their individual fields of specialization. Individual contributions to the discussions on which decisions are based is vital to business. So, if recognition is given to the concept that individualistic thought is particularly appropriate and vital in preparing for business decisions, a great deal of the worry about stifling the individual can be relaxed. Team work can be seen in perspective as a force which supplements and sparks, not subjugates, individual creativity.

General Electric, to continue the example, maintains an engineering personnel headquarters organization whose function is to help managers match position requirements with performance and abilities of individuals on a company-wide basis. A comprehensive over-all register of talent gives the engineer opportunities not only to advance in his particular department, but also to be promoted from one component to another.

*The Engineer is Regarded as a Professional.* Again perhaps contrary to popular notions, the engineer in a large company has a high professional standing. Most companies recognize the engineer as a responsible professional on whom the company must depend for specialized intellectual knowledge. Large companies have an outstanding record of promoting and encouraging their engineers to participate in professional and technical societies. Nearly all of them encourage their engineers to publish professional and technical articles and provide them with opportunities to take part in society meetings, including, when appropriate, underwriting of the expense involved.

Engineers in large companies have opportunities to develop and work on new and different products. This, the author says, helps to make the engineering work in a large company challenging and rewarding.

This activity is important because for the professional man, engineering or otherwise, recognition by his professional associates and by the organization in his field is generally at the head of his list of professional aspirations. Recognition by the scientific community heads the list of desired attainments not only for reasons involving the satisfaction of *identification* with his professional field, but also because there is practical need for exposing one's work to appraisal and evaluation by other engineers.

So too, the size of a large company is an element of strength because of the breadth of technical talent available to act as a court of engineering informed opinion. Contributions made by the individual are judged and rewarded by those with recognized and respected technical competence.

*Both Adventure and Security are Offered.* Security is never the primary concern of the dedicated engineer. Adventure and challenge are; and he will find them abundant in the large company. On the subject of security, however, salaries are important to everyone, engineers included. Here, large companies in general have developed scales which will both *attract and hold* the engineering talent which is required in the conduct of their businesses. They nearly all have sound retirement, insurance and savings programs which provide outstanding benefits, because the reserve funds are large enough to be very effective as investments. Over and above all this, there is an extra element of security for the engineer in one aspect of the large company's operation. If a new product line does not become a business success in a large company there are generally other activities which can absorb the engineering talent. But often, when a product line fails in companies without this diversity factor the engineers who were working on it must look elsewhere for employment.

The spectrum of engineering work in a large company is certainly challenging and rewarding. Opportunities for training, education, self-development, achievement, and advancement are outstanding. The environment, featured especially by: good facilities and equipment; regard for the engineer as a professional man; association with expert specialists in many fields of mathematics, physics, chemistry, and engineering sciences; support from research and engineering laboratories, and participation in professional societies is inviting indeed. A big company does offer the unique combination of zestful adventure, solid security, and broad-span opportunity in a professional career.—**End.**

# Professional Profiles

Introducing John C. Denton, P.E., president of Spencer Chemical Company, in the first of a new personality feature.

THE engineering career of John Charles Denton, P. E., of Kansas City, Mo., reads like a chapter out of the traditional American success story.

Mr. Denton, familiarly known as Jack, began his career with Spencer Chemical Company in 1942 as a youthful foreman of one of the company's nitric acid sections. This fall, seventeen years and a half dozen promotions later, Jack Denton was named president of the sprawling Spencer works. The promotion marked the high point in a career that has been a series of successes with one of the country's fastest growing chemical concerns.

A native of Oklahoma, Mr. Denton worked in filling stations in the oil fields of Oklahoma, Texas, and Kansas to help pay his way through college. He received a Bachelor of Science degree in petroleum engineering from the University of Tulsa in 1941.

He was employed briefly by Gulf Oil Corporation in Tulsa as a student engineer, familiarizing himself with production practices in the field and laboratory. In April, 1942, Mr. Denton joined Spencer Chemical and was assigned as foreman of the nitric acid section. But he was quickly selected for a special three months training program in Canada and returned to become assistant supervisor in the ammonia plant. Fourteen months later he became supervisor of the plant.

His career was interrupted in 1944 when he was commissioned in the U. S. Navy as an ordnance specialist. He served as an assistant gunnery officer on a destroyer, an ammunition cargo officer, and a loading officer. He was discharged in 1946 as a lieutenant junior grade after serving in the European-African and Asiatic theaters.

He rejoined Spencer Chemical and his old job as supervisor of the ammonia plant, but five months later he was named assistant to the works manager. In this job, he helped to implement a major employee training program for the company. In 1948, he became assistant chief engineer and two years later was appointed production superintendent of the Jayhawk works of Spencer. The next year he was assigned to the position of works manager of Henderson plant where he remained until July, 1952.

Returning to the Jayhawk works, Mr. Denton was named general manager of industrial services. In 1954, he moved to Kansas City to become general manager of engineering and construction. At this post, he directed more than $30,000,000 worth of construction including the building of the Vicksburg, Miss., and Orange, Tex., works.

December, 1955, found Mr. Denton becoming general works manager to direct all of the company's manufacturing facilities. He remained in this position until the company was reorganized on a divisional basis in January of 1957. He was then named head of the agricultural chemicals division the position he held when he was promoted to the president's job in 1959.

Mr. Denton is married and has two daughters, sixteen and twelve years old. They live in Fairway, Kans., a suburb of Kansas City. He is a member of NSPE and the Kansas Engineering Society.

## *Special Supplement . . .*

# NSPE Launches Poll on Question of Unity

THIS month the 51,000 members of NSPE will receive a questionnaire seeking their opinions on one of the biggest questions facing the engineering profession—UNITY.

This grass-roots poll will be helpful to committees and the Board of Directors in determining NSPE's course of action in future considerations of how to best coordinate the activities of the profession. It is obvious that if the poll is to be a true reflection of the membership's thinking it must have a high percentage of participation. And more important, it must have the participation of an informed membership.

In an effort to assist members in acquainting and reacquainting themselves with some of the basic principles and ideas of unity, the Inter-Society Relations Committee has prepared a 12-page supplement for this month's issue of the AMERICAN ENGINEER. A copy of the questionnaire is on pages 38-39. The official questionnaire will be included with the annual ballot, which will be mailed from NSPE headquarters this month.

The poll is being conducted in line with NSPE's philosophy that the ultimate solution to the question of unity must have the understanding and support of the individual engineers who comprise the profession. This grass-roots understanding and support is particularly important in view of the confusion which has often surrounded discussion of the subject in the past.

Unity is a rather simple-sounding phrase, but exactly what does it mean in relation to the engineering profession?

The term really means the bringing together of the thinking, activities, and objectives of individual engineers into common action so that the profession may present a united front in matters of public concern and professional advancement and, at the same time, better the engineers' own welfare and enhance his value to the public.

Today, there are well over one hundred different engineering societies and organizations in the U.S. Included among these are the various founder and technical societies, the Engineers Joint Council, Engineers' Council for Professional Development, and NSPE.

The question facing the profession is: How can the activities of these organizations best be coordinated and unified for the benefit of the entire profession?

Numerous answers have been suggested through the years, but today most of the proposals center around two major approaches: (1) a Functional Plan, and (2) a Federation.

The American Institute of Electrical Engineers first proposed the Functional Plan in 1956. It has since been endorsed in principle by the American Society of Mechanical Engineers and NSPE. In simplified terms, the AIEE proposal provides for an agreement that the Engineers Joint Council coordinate and speak for the profession in technical matters, Engineers' Council for Professional Development in educational matters, and NSPE in professional matters. Each of the technical societies would continue to maintain such programs as they feel desirable for engineers in their specialized fields.

There has also been discussion in some quarters about the possibility of attaining unification through a federation of societies. NSPE, however, has opposed the federation concept on four major grounds: (1) that it did not provide a grass-roots organization through which individual members could maintain democratic control; (2) that it did not provide an effective organization at the local, state and national levels with properly-established lines of communications; (3) that it did not provide a continuing, sound financial foundation with a budget adequate to satisfy the needs of the profession, and (4) that it did not provide for membership, standards essential for the recognition of professional status.

These various concepts are discussed more fully on the following pages. Most of the material in this supplement is based on the kit on "The Organization of the Engineering Profession," which was prepared earlier this year by the Inter-Society Relations Committee. Many local chapters are using the kit as background material for discussions in preparation for this month's poll.

It is vitally important that each member of NSPE acquaint himself with the entire question of unity and that he makes his views known through his answers to the questionnaire.

# The Functional Plan - What It Is

Out of the numerous suggestions and counter suggestions on unity, the American Institute of Electrical Engineers in 1956 came up with a bold new plan that has caught the imagination of engineers throughout the profession.

This proposal which has come to be known as the Functional Plan has already been endorsed in principle by the nation's three largest engineering societies—ASME, NSPE, and AIEE.

Under the Functional Plan, the organization and activities of the profession would be cooperatively coordinated under the Engineers Joint Council (EJC), Engineers' Council for Professional Development (ECPD), and NSPE. EJC would be responsible for the coordination of technical activities; the ECPD for educational matters, and NSPE for professional matters.

The plan does *not* propose that any of the engineering societies give up any of their activities, but they would coordinate those items reaching beyond their specialized fields through EJC, ECPD, and NSPE.

As outlined by AIEE, Engineers Joint Council would function primarily as a coordinating body for technical matters crossing the boundaries of the various disciplines. It would retain its interest in the recognition of specialities, honors for engineers, the National Engineers Register and relations with corresponding bodies in foreign countries. This is the technical group of activities.

ECPD would continue its interest in the education and development of young engineers, the establishment of standards for engineering education, the accreditation of engineering curricula and the Canons of Ethics. This is the educational group of activities.

NSPE would continue its activities relating to registration of engineers and economic considerations in the employment of engineers including salaries and fees. It would continue its activities in national affairs and national defense and would present the thinking of the profession in matters of legislation affecting engineers. It would expand and coordinate public relations to enhance the prestige and standing of the engineering profession as a whole. (The technical societies would, of course, be free to conduct such public relations activities as they consider appropriate to their own specific fields.) The activities allocated to NSPE are those in the professional group.

Subsequent to the AIEE proposed Functional Plan, and not a part of the original presentation, it has been suggested that coordination of activities between the three major functions of the profession might be desirable. While details for such a coordinating council have not been formalized, it has been suggested that representatives of ECPD, EJC and NSPE should meet periodically, either informally or if desirable under a formal organization, to discuss long-range needs of the profession and to consider additional areas of interest which might be explored by any one of the three functional groups.

AIEE in presenting the Functional Plan offered it as a first step toward more effective organization of the engineering profession. The development of such a coordinating body might well follow as further studies of the need of the profession emerge.

With regard to surveys of the profession, it was the concensus of the AIEE Board that EJC or some similar technical coordinating body should carry out those of a technical nature. When the subject to be surveyed is political or has to do with the economic welfare and working conditions of engineers, it was considered to be more properly a function of a body of the type of NSPE.

To eliminate such duplications of effort as exist, the AIEE plan also called for EJC, ECPD, and NSPE to relinquish certain activities in line with the division of responsibility outlined in the Functional Plan. The Plan provided for EJC to give up activities it was then conducting in the fields of employment conditions, labor legislation, and certain types of special surveys. AIEE also called on ECPD to relinquish its interest in the practice of engineering and on NSPE to relinquish activities in the fields of technical education and young engineers.

In submitting its plan, AIEE also suggested that NSPE temporarily open its membership to nonregistered engineers who are otherwise qualified as evidenced by their holding suitable grades of membership in technical societies. As a result of the suggestion, NSPE sought an expression of opinion from its membership through a poll of its local chapter and state society officers. The result of the survey indicated a majority opinion in favor of continuing registration as an essential requirement for membership at the national level. The survey, however, did reflect a sentiment for considering membership of nonregistered, but qualified, engineers at the local and state levels of the Society. (A fuller explanation of registration and its relation to the unity question appears on page 37.)

# NSPE Views the Functional Plan

(*Editor's note:* From the start, NSPE has been impressed with the possibilities of the AIEE Functional Plan. Excerpted below are some comments and opinions on the Plan.)

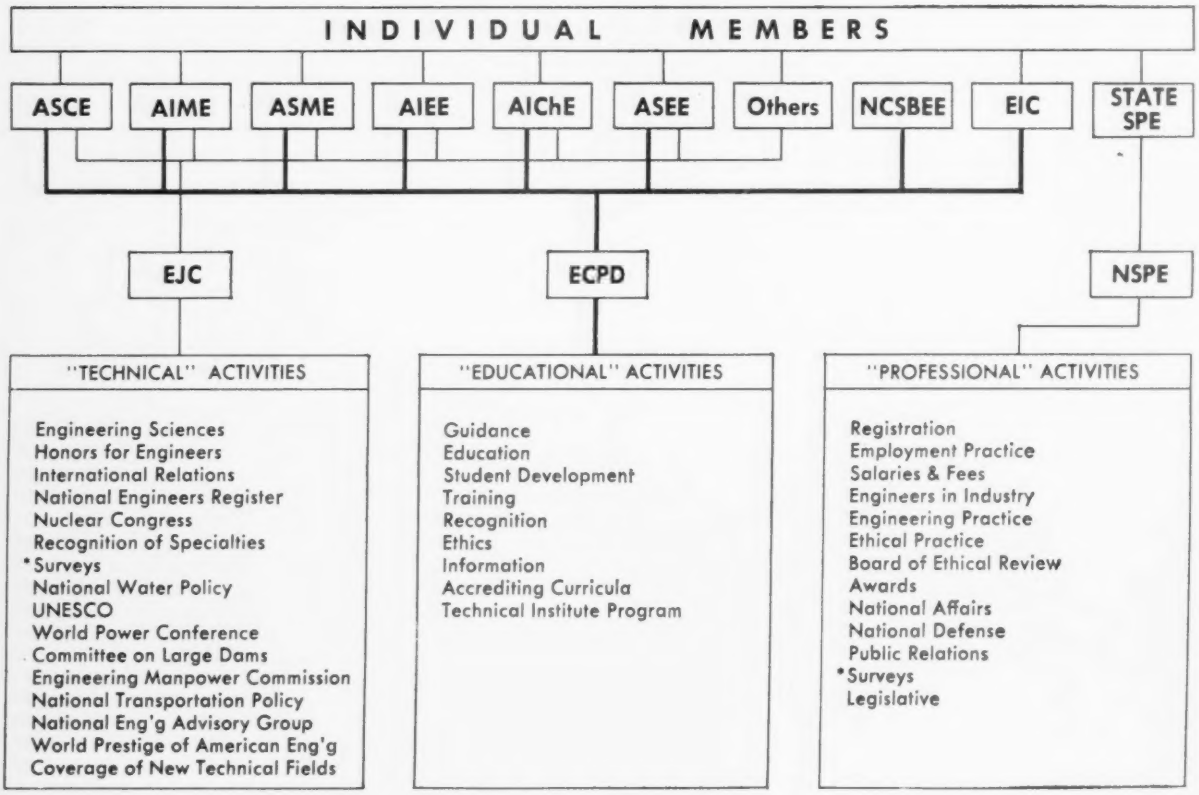
The Functional Plan has stirred the imagination of the entire engineering profession as a feasible, practical, workable procedure for accomplishing more effective action on the technical, educational and professional problems of the engineering profession. The American Institute of Electrical Engineers (AIEE), which first proposed the Functional Plan, has given much time and thought to the *practical* problem affecting unity in the profession, as well as to the objectives of unity. It has reviewed the successes and failures of past attempts, not only of our own profession but of other professions. It has reviewed the problems from the viewpoint of a realist, taking into full consideration conditions as they exist today.

We need to quickly establish a sound organization in the profession such as that provided by the Functional Plan. This will accomplish two objectives: first, it will help in building the strong profession needed for *true* unity, and secondly, it will now provide the most efficient type of organization for the successful operation and continuing advancement of the profession.

In presenting the Functional Plan, AIEE made it clear that it was not being proposed as an ultimate unity organization but only as a step in that direction. It organizes the profession as we would organize our own business, into a coordinated, efficient operation based on the fundamentals learned from the past, as well as from the principles of specialization. It utilizes to the fullest advantage the going concerns we have today. If this can be accomplished, it is strongly believed that the ultimate unity organization will then develop in an orderly fashion. Too often in the past we have tried to effect an ultimate unity organization all in one great sweep instead of trying to build such an organization step by step from the ground up. Of all people, engineers should know that any structure must start with the foundation and that it is built a piece at a time until completed. True unity must come from evolution—not from revolution.

We do not need any more organizations to effect unity; all we need to do is to better organize, fully utilize and support the ones we have. It is believed that the several technical societies, the EJC, the ECPD, and the NSPE *can* work

## The Functional Plan




** EJC—When the subject is Technical.*
*NSPE—When the subject is Political, or Economic Welfare, or Working Conditions of Engineers, etc.*

*Note:—UET, Conference Board for Industry, AAAS continue to function as at present.*

together in the areas outlined by the Functional Plan.

Too often in the past considerations of and decisions relating to such subjects as this have been by others than the engineering memberships themselves. Such discussions have been both enlightening and helpful. However, decisions on such vital matters affecting all of the profession should be made by the engineers themselves. Only in this way will we ever establish strong and enduring unified action, because only in this way will it be supported by those who must support it – the individual engineers.

## How the Other Professions Are Organized

The organization of the engineering profession is often compared with the highly-successful organizations of the medical and legal professions.

Both the American Medical Association and American Bar Association are democratically-controlled "grass-roots" organizations, in many respects not too dissimilar from the proposed engineering profession's Functional Plan.

The AMA is an organization of 194,000 physicians and serves as the voice of the medical profession. *Active members of the AMA must be licensed physicians* who are active members in one of the component county and district societies and also in one of the fifty-three constituent state and territorial medical societies. Physicians in certain governmental services may join the AMA directly. County and district and state and territorial societies are completely autonomous.

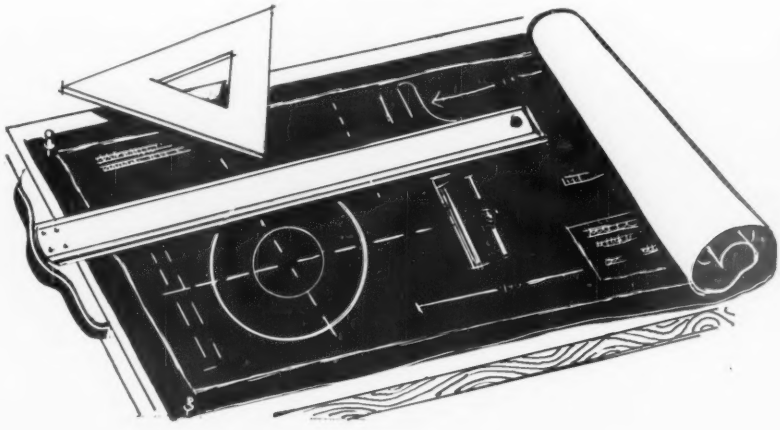
The AMA House of Delegates is the official policy-making body. It is composed of approximately 200 physicians elected by various state and territorial associations on the basis of one delegate per one thousand AMA members or fraction thereof. It also has representatives from each of the twenty-one scientific sections, the Armed Forces, the Veterans Administration and the U. S. Public Health Service. The House meets twice annually. It elects seven officers and trustees. The Board of Trustees, the president and president-elect serve as the interim governing body. The executive vice president supervises and coordinates the day-to-day activities of the councils, committees, etc. Council and committees are composed of physicians from various parts of the United States, but their activities are directed from AMA headquarters.

AMA represents the medical profession on national matters involving ethics, socio-economics, educational, medical-legal, and legislative matters. It is also the major scientific spokesman for the profession through its scientific publications, scientific meetings and day-to-day scientific activities. *The individual physician is the most important unit in the organization of AMA.*

Contrary to popular belief among engineers, there are many specialty organizations devoted to the advancement of medicine, such as the College of Surgeons, which exists *separately* from AMA. In some instances, membership in AMA is a prerequisite for membership in such a specialty organization, e.g., the American Academy of General Practice.

The organization of the American Bar Association bears many resemblances to the AMA. The policy-making and legislative authority of the ABA is vested in the House of Delegates composed of 246 official delegates representing all branches of the legal profession, the ABA, state and territorial bar organizations, major local bar associations, sixteen affiliate national legal organizations and various federal officials who are ex officio members. This group of 246 lawyers directly represents an estimated 200,000 members of the profession in the United States. The 1,400 autonomous state and local bar associations throughout the country constitute the largest single unit in the House, with 107 delegates.

An analysis of the organization of ABA reveals points of close similarity with AMA as follows: (1) It is strictly a democratically-controlled, "grass-roots" organization; (2) It is *not* a federation of societies; (3) It is organized on three levels; namely, local, state, and national; (4) There are specialty or technical organizations outside of ABA who coordinate their activities with ABA; (5) The "technical" branches coordinate their activities through representatives on the ABA House of Delegates; (6) All members have the common tie of having been licensed to practice, and (7) The organization is adequately financed to fulfill the needs of the individual member, the profession and the public.



# History of Engineering Organizations

The first organized activity in the engineering profession on a national scale occurred in 1852 with the formation of the American Society of Civil Engineers. Prior to that time, most identifiable engineering had been in connection with military work—development of fortifications, to some degree transportation problems, and other allied activities.

About the middle of the nineteenth century, civilian engineering activities were largely in the construction field, and the establishment of civilian, as contrasted to military engineering, contracted to civil engineering and became identified with the construction phase of engineering.

It was nearly twenty years later that the mining and metallurgical engineers felt an organization directing its energies toward their specific problems would be feasible, and in 1871 the American Institution of Mining and Metallurgical Engineers was founded.

The advent of the steam engine and the development of mechanical engineering caused the formation of the American Society of Mechanical Engineers in 1880.

Edison's discovery of the practical uses of electricity presented the expanding horizons for electrical engineering, and the American Institute of Electrical Engineers was founded in 1884.

The organization of the five major branches of the profession was completed shortly after the turn of the century with the formation of the American Institute of Chemical Engineers in 1905. Since that time more than one hundred national engineering organizations have evolved, each concerned with the expansion of the technology of a specialized facet of the engineering profession.

### American Association of Engineers

Just before World War I in 1914, an over-all engineering organization was started, the American Association of Engineers, with an organizational pattern following that of previously-organized societies, being composed of a national organization with local chapters. Grades of membership were provided offering the opportunity for all degrees of engineering interest to be associated with this organization. It grew quite rapidly, reaching a membership in excess of 20,000 by the early "20's." While still in existence today, its membership has decreased to something less than 5,000, maintaining offices in Chicago.

During its career it had an extensive program of life insurance and an aggressive placement service, both of which it still provides. While it espoused registration as a desirable thing for the profession, it never made this a requirement for membership.

### American Engineering Council

In 1920 there was established the American Engineering Council. This Council was a federation of all engineering societies, primarily for the purpose of Washington liaison both with Congress and the Government.

AEC grew in stature through the "20's," maintaining a Washington office and executive secretary and coordinating several projects on behalf of the profession. Early in the "30's," internal differences appeared in the AEC sufficient that one and then more of the major societies of the profession withdrew their financial support and representation. The AEC began to become less and less effective, finally going out of existence in 1941.

### Engineers' Council for Professional Development

Further organizational efforts in the profession primarily followed technical branch lines until 1932 when engineering education was faced with the necessity of establishing minimum requirements for educational institutions as well as a desire to continuously increase the caliber of engineering education. The five founder societies together with the National Council of State Boards of Engineering Examiners, the Society for the Promotion of Engineering Education (name changed in 1946 to the American Society for Engineering Education), and the Engineering Institute of Canada established the Engineers' Council for Professional Development. The ECPD established four major areas of activity and in the ensuing years has done notable work in each.

Probably its most outstanding contribution to the engineering profession has been its accrediting program for engineering institutions, which has done much to increase the prestige of engineering education, as well as improve the facilities, faculties and curriculum at the accredited institutions.

A second major accomplishment for ECPD resulted from the extensive work in the development of a Canons of Ethics, now widely accepted in the engineering profession and endorsed by nearly one hundred of the engineering societies.

The two remaining areas of activity of ECPD have likewise made notable contributions to the profession—one in the area of the transition for young engineers from their collegiate work to their work experience, referred to by ECPD as "the first five years" program. The second area is in the area of vocational guidance where ECPD has sponsored the development of literature, testing and evaluating techniques now available to the profession.

The ECPD has throughout its existence been able to call on the outstanding leaders and thinkers in the engineering profession for the development of broad policies and suggestions for implementation by other groups. It has operated through committees at the national level only and has not espoused or attempted to implement specific programs except as a coordinating body of those programs activated by other groups.

**National Society of Professional Engineers**

With the development of more and more specialization, it became apparent that the common problems of all engineers in the development of their professional responsibilities required the attention of all engineers. There was and still is, however, sound reasoning for the development of technical societies paralleling the branches of the profession.

In 1934 a group of engineers met to form the National Society of Professional Engineers. The area of activities of this organization was based on the philosophy that every engineer has two distinct interests. First and foremost, he is a member of the engineering profession and as such has a common interest with every other member of the profession in professional, social, economic and ethical fields: and, second, he has been trained and his work involves, usually, one particular branch of the profession, establishing a community of interest and a need for organization in that particular branch.

The philosophy clearly delineated two basic tenets—One, that there is a very definite need for technical branch organizations and that they should be sponsored and supported by the engineers of that specialized branch, and two, that there should be an organization devoted exclusively to the professional interests of all engineers, and all engineers should likewise support and promote its activities.

Since this was an entirely new philosophy in the organization of the engineering profession, there were a number of questions which had to be answered in order to implement such an organization. Hence, it was determined that there were certain criteria which the new organization should meet:

1. It must be composed of engineers only.

2. It must be composed of individual engineers having a voice in its affairs and to whom its officers and administration would be responsible in the best democratic sense.

3. Since every engineer is a citizen, the organization should be effective at the three levels of interest of the citizen engineer; i.e., community, state and nation.

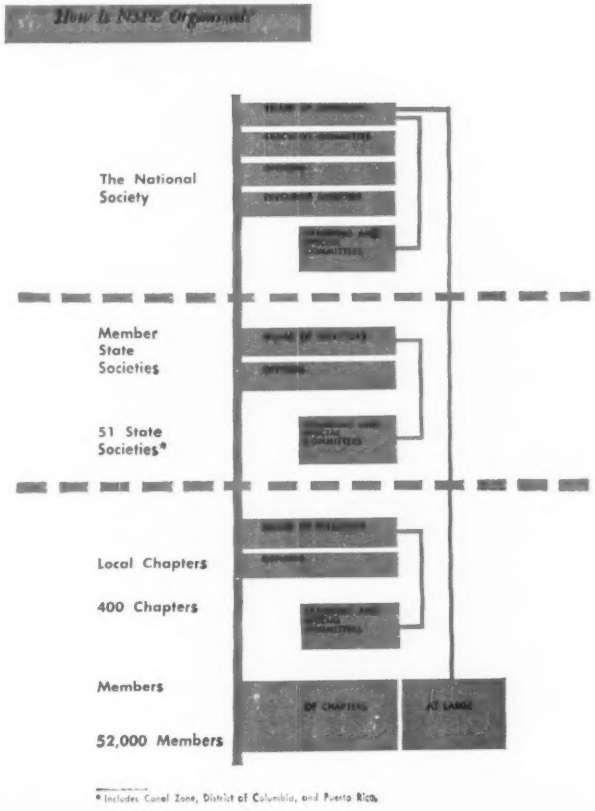
Recognizing that in time laws covering the practice of engineering would be enacted in all states of the union; that as these laws came into being, their value would be recognized both by the public and by the profession, and that in time all qualified engineers would have met the requirements established by the state registration boards, registration was established as the basic requirement for membership. It was that single grade of membership by which clear legal identification of the members of the profession could be established.

To be effective at the three levels of citizenship-engineer interest, a careful analysis of an organizational pattern was required. That analysis pointed to development of an organization structure of the professional society having three levels of activity and administration—local chapter, state society, and national society. The professional engineer automatically became a member of all three as he joined the professional society.

Recognizing the desirability of an effective organization at the community level, the local chapter was formed with officers, bylaws, meetings, and an opportunity to thoroughly discuss any problem affecting the profession. Representatives of these local chapters within a state then coordinate the majority opinions of the local chapters to establish state policy and through the state organization work effectively on such matters as require state-level activity.

So evolved a completely democratic organization, effective at the three levels in which the profession should and must be active.

Since the founding of NSPE in 1934, this philosophy of the professional society devoted exclusively to the social, ethical, economic and professional matters of engineering —and working together with the various technical societies in the advancement of the specialized branches of the profession—has grown until in 1959 it comprised 51 state societies, 400 chapters and approximately 51,000 members.




*Includes Canal Zone, District of Columbia, and Puerto Rico.

### Engineers Joint Council

With the demise of the American Engineering Council, the presidents and secretaries of the five founder societies felt it desirable to get together periodically to discuss mutual problems. There was soon evolved an organizational pattern for representation. This was ultimately formulated into a constitution for further consideration and discussion by the participating societies. After several studies spanning the period from 1943 to 1952 a new constitution was drafted for the EJC promoting the affiliation of other national, regional and local organizations. The new constitution provided for representation from the boards of directors of affiliated societies rather than the president and secretary representation and established qualifications for affiliation, among which was the requirement that a society to be eligible for affiliation must have at least fifty per cent of its members graduate engineers.

Several of the constituent societies became concerned with the tax status of EJC, it having first been exempt from income tax under the general classification of a business league, which some organizations felt might jeopardize their classification as a scientific organization. Further studies of this problem resulted in a revision to the objectives of EJC, limiting it to the activities in the scientific, technical and educational fields to permit a reclassification as a scientific and educational organization. With this new constitution EJC was incorporated in 1958 and had by this time affiliated more societies.

As of 1958 EJC had committees in the following areas of activity: Executive; Constitution and By-laws; Finance; Secretaries; Membership; Planning; Honors for Engineers; National Engineers; International Relations; Engineering Manpower Commission; Employment Conditions; Labor Legislation Panel; Engineering Sciences; Recognition of Specialties in Engineering; Editors; Air Pollution; National Water Policy Panel; Atomic Energy Panel; Nuclear Congress Policy Board; Public Relations; Practice of Engineering; Abstracting Services; Relations with NSPE; Who's Who in Engineering; Consulting Practice, and EJC Governmental Activities.

### The 1945 Study

In the early consideration of the organization of EJC, the five founder societies then constituting EJC appointed a special committee composed of three representatives from each of the five societies. This committee presented a report recommending the expansion of EJC, to which the three representatives of the American Institute of Mining and Metallurgical Engineers presented a minority report suggesting that NSPE should be supported in the development of the professional aspects of engineering, primarily because of its three-level organization composed of individual members.

### 1948 Exploratory Group

In 1948 the president of the Engineers Joint Council invited sixteen societies to send representatives for the purpose of exploring the whole area of professional activities in the engineering profession. This group quickly arrived at a series of objectives designed to evolve more effective action in the professional development of the engineering profession. At this point two of the sixteen societies (SAE and IRE) took the position that this area of activity was not within the scope of their objectives and withdrew. The remaining fourteen societies continued their considerations through 1950 toward evolving a satisfactory organization to accomplish the objectives previously agreed upon. Four plans evolved:

Plan A—An expansion of EJC to provide the affiliation of other than the five founder societies.

Plan B—An expansion of EJC as above, but providing for individual membership in the EJC.

Plan C—A merger of EJC and NSPE.

Plan D—The further expansion of NSPE as *the unity* organization.

The members of the exploratory group approved Plan A as the vehicle for the organization of the engineering profession, with the

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***Also available for study:***


**All Committee Reports for the years 1958 and 1959**

**Complete Kit of Unity Publications and Materials**

**Inter-Society Relations Committee Report to the Board of Directors, Indianapolis, Ind., 1953**

**Unity for Professional Action, NSPE Believes reprint, by Paul H. Robbins**

NSPE representative presenting a minority report based on the NSPE contention that a successful organization in the realm of professional activities must be based on four points not existing in the EJC plan:

1. Three-level organization.
2. Individual members.
3. Limited to qualified members of the profession.
4. With adequate financing and authority to act.

#### General Electric Engineers Plan

This plan was in effect a further development of Plan C of the exploratory group, recognizing EJC for coordination of activities of the technical societies and NSPE for the development of professional activities, with an over-all governing body composed of representatives of the two major groups.

#### The Morton Plan

This plan advanced by a vice president of the American Institute of Electrical Engineers paralleled the GE Plan with some modifications and further details.

A number of variations both of the above and other suggestions were presented from time to time both within EJC, NSPE and individual societies. None of these plans were officially endorsed by any organization although they received considerable discussion.

#### Functional Plan

The board of directors and officers of AIEE have been active in practically all of the discussions and considerations over the years. Starting in 1946, AIEE has sampled and polled its membership several times to endeavor to secure an indication of how they feel regarding the over-all organization of the engineering profession and the proper part which AIEE should play. There was, of course, some difference of opinion; however, there was a clear preponderance of opinion on certain basic matters. As a result, the AIEE board in June, 1950, published a statement of policy in three parts which has the support of the membership. This statement follows:

1. The board of directors will work continually for the unification of the profession.

2. The board of directors recognizes the fact that the Institute finds its chief reason for existence in the technical field.

3. The board of directors will handle questions on nontechnical affairs as necessary and as they arise, on an emergency basis until through unification they can be handled on a general professional basis.

Continuing its study of the subject with the assistance of additional membership opinion samples, and after several years of participation in Engineers' Joint Council as expanded in accordance with the results of the work of the Exploratory Group, the AIEE board of directors in June, 1956, adopted a proposed plan for coordination of the activities of the various existing engineering societies and councils, which has become known as the Functional Plan. This plan proposes to assign to organizations already in existence certain areas of activity for which those organizations are preeminently qualified. Without suggesting any curtailment of the interests of any of the founder societies or other similar individual-membership organizations, the Functional Plan proposes that the cooperative action of these societies on matters of a technical nature, and certain other related matters, which are broader than the scope of any one society be handled by EJC. It also proposes that the cooperative action of the societies in the field of engineering education be handled through ECPD. Finally, it proposes that support be given to NSPE in the further development of the professional aspects of engineering. This proposed plan has been approved in principle by ASME and by NSPE. Thus the Functional Plan has officially been approved by the three largest organizations of the engineering profession.

# NSPE Official Policies on Unity

*(Editor's note:* NSPE has long been concerned with the question of how the engineering profession can best be unified. Its policies on this vital problem have evolved through constant study and deliberation of its Inter-Society Relations Committee, its Board of Directors, and through expressions of opinions from individual members. Below are the official policy statements which have been adopted by the Society.)

#### Unity of the Engineering Profession

The National Society of Professional Engineers believes in the need for unity within the engineering profession. Unity is essential to provide the engineering profession with a vigorous body for the most effective professional action.

Having worked long, earnestly and honestly on the problem of the unification of the engineering profession, in company with equally sincere efforts by representatives of other engineering societies, the National Society of Professional Engineers enunciates the following points which are deemed essential for the success of a unity organization:

1. A unity organization must be composed of individual dues-paying members.

2. The organization and integration of the engineering profession must be at three levels—local, state and national.

3. The unity organization must have the authority to act.

4. The unity organization must be supported by adequate arrangements for financing the contemplated activities.

Unity should be sought and developed at the local and state levels of operation, as well as nationally. Local chapters and member state societies are urged to cooperate to

the fullest extent with local and state organizations having mutual interests and objectives.

The National Society of Professional Engineers will continue to work for unity through a vigorous and continuing program of active cooperation with all other engineering societies in those programs having professional objectives on the national, state and local levels, without prejudice as to the origin of the program. This shall include participation in programs initiated by other organizations, and solicitation of cooperation of other societies in NSPE's programs.

The National Society of Professional Engineers approves, in principle, the division of activities in the engineering profession as proposed by the American Institute of Electrical Engineers to separate and re-align the responsibilities for activities of interest to all branches of the profession to the end that:

1. Engineers Joint Council (EJC) to provide the medium of cooperation and coordination on technological matters and to present to the public the position of the engineering profession on technological matters.

2. Engineers' Council for Professional Development (ECPD) to provide the medium for guidance in engineering education: (a) During high school preparation; (b) During undergraduate and postgraduate preparation; (c) During engineer - in - training period for professional career.

3. National Society of Professional Engineers (NSPE) to provide the medium for general promotion of professional aspects of engineering in the eyes of the public and be instrumental in the consequent enhancement of the professional status of engineers. The term "professional" as differentiated from "technical" and "educational" is construed to include such activities as registration, employment practices, salaries, fees, legislation, ethics, etc.

NSPE has refrained from entering into technical activities and to this extent is practicing the basic concept of the Plan. NSPE has no activity in conflict with those of ECPD and will continue its activities in support of ECPD programs.

**Technical Societies—Membership In**

NSPE directs its efforts to those professional matters of common interest to all professional engineers. In addition, membership and active participation in at least one of the technical societies representing his field of practice is recognized as a prime essential for achieving full stature as a professional engineer.

NSPE, therefore, recommends that each member join and support the work of the technical society which serves his particular field of practice. *(Policy No. 51)*

# *Why NSPE Has Not Joined EJC*

Twice in the past six years, NSPE has been invited to become a member of the Engineers Joint Council. Both invitations were turned down by the board of directors after lengthy study by the Inter-Society Relations Committee.

In recommending the rejection of the last invitation in June, 1959, the NSPE board had these comments:

It will be noted that seven of the ten objectives of EJC specifically mention "the art and science of engineering" and all ten definitely and exclusively concern the technical phases of the profession as stated by the phrase "the art and science of engineering." None of the ten objectives make any reference whatsoever to what is normally termed the "professional matters" of concern to the profession. Subparagraph (g) specifically prohibits EJC from spending any funds for anything except "scientific or educational purposes in the various fields of the art and science of engineering." It will also be noted that the objectives of NSPE concern only "the professional, social and economic interests of the professional engineer." NSPE has very carefully refrained from entering into any of the fields of "the art and science of engineering." This raises a most serious question as to the propriety of NSPE being a constituent society of EJC.

It has also been pointed out that the weaknesses of EJC are those inherent to a federation of societies; that the affiliation of NSPE with EJC would only add a few dollars to its woefully inadequate financial coffers and could in no way give additional finances to the constituent societies of EJC so that they could afford to appropriate more money to it; that the weak financial foundation of a federation of societies was demonstrated in the failure of the American Engineering Council several years ago; that the affiliation of NSPE could in no way solve the tax status problems of EJC, nor could it affect the remoteness of EJC from the individual grass-roots engineer—except possibly as NSPE might choose to publicize EJC to its own members through its own organization, and that such an affiliation could not materially change the geographical distribution of its directors. It is difficult for many engineers to see how the fundamental weaknesses of EJC could be affected by NSPE's affiliation with it because it would still be a federation of societies—many of whom include members who are not engineers—and it would still have the basic weaknesses inherent in such a federation.

# Registration and Unity

In our unity considerations, we must recognize that there is one fundamental principle that the medical and legal professions have definitely established—the one criteria that gives them full legal and public recognition as a profession and to a great extent is the prime basis of unity in those professions —that one fundamental principle is *universal acceptance of registration.*

The engineer renders a service just as the doctor or lawyer, but we differ in one most important respect from these two professions —universal acceptance of registration. This applies equally to all individual members of all three professions whether they be employed in private practice, by industry, as public servants or in any other capacity. Every engineer, just as the doctor or the lawyer, has an obligation to the profession, to himself, to his employer and to the public to become registered. When this fundamental principle is accepted, we will have built a solid foundation for a true engineering profession – we will have established the common tie that produces unity. There should certainly be this much professional pride.

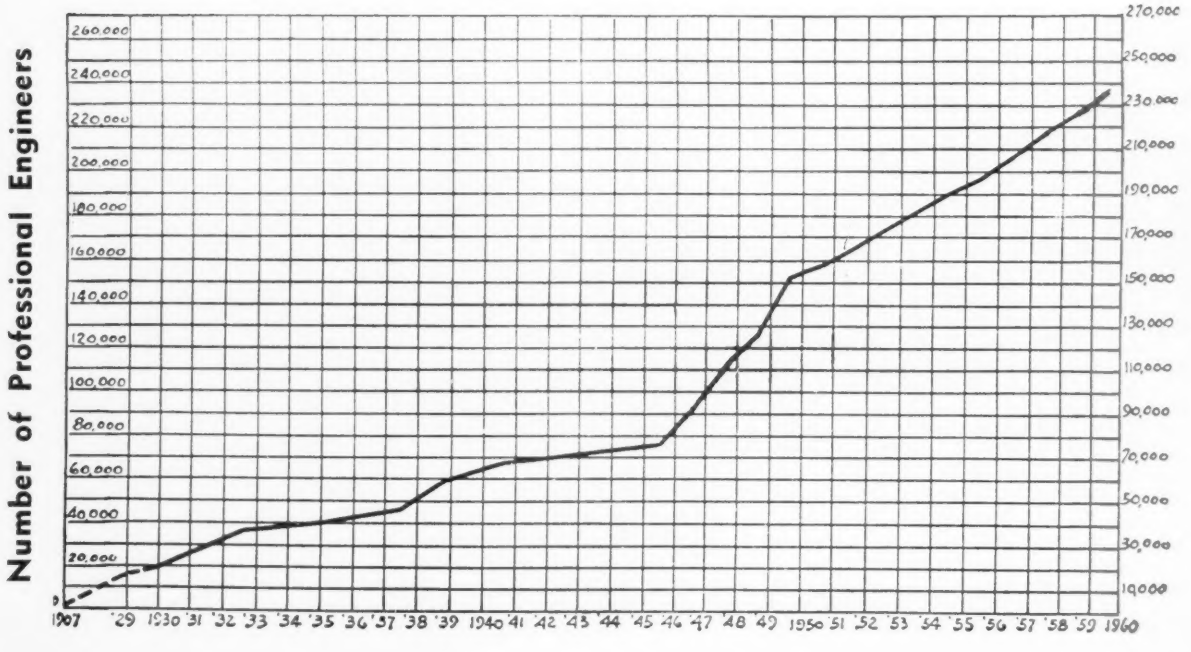
It becomes apparent that we need to establish a firm foundation for the profession itself through acceptance of registration. Through the years we have been endeavoring to build the roof before we have completed the foundation. We have already found this cannot be done. Also, the other professions have shown us that before the desired unity can be attained there must be a common tie—that one thing that is common to *all* engineers—to bind them together. They have also shown us that this one thing is licensing of all members of the profession.

This was well summarized by NSPE Past President T. C. Forrest, Jr., speaking before the American Society of Civil Engineers, as follows: "We can prepare organizational charts of all kinds and we can set up machinery, but until we have developed a professional pride in the engineer and a consciousness of his responsibility to the profession, any unity organization will be without the necessary heart throb and soul necessary to weld it into an instrumentality that all individual engineers will feel a responsibility in connection therewith."

This viewpoint reveals one of the basic causes of the failure of our unity efforts to date. There has been much wishful thinking. We have become thoroughly confused by trying to take short cuts. We have tried to build on an insecure foundation. It is apparent that we must take steps to strengthen this foundation. Since this is a professional problem, it should be spearheaded by the professional society with the very close cooperation of all engineering societies.

*(See unity questionnaire reproduced on following two pages — Editor.)*

***National Council of State Boards of Engineering Examiners Chart Showing Number of Registered Engineers by Years***



# Organizations Described

**For information and guidance, the following brief explanations of ECPD, NSPE, and EJC are provided:**

Engineers' Council for Professional Development was formed in 1932 and is composed of representatives of the five founder societies plus the National Council of State Boards of Engineering Examiners, The American Society for Engineering Education, and The Engineering Institute of Canada. Its primary activities since its formation have been in the area of accrediting engineering curricula, formulation of the Canons of Ethics, stimulating vocational guidance for engineering, and concern for the young engineer following graduation.

The National Society of Professional Engineers, formed in 1934, is a membership organization of registered professional engineers governed by representatives of fifty-one state societies, which in turn encompass about four hundred chapters. It is concerned with the professional, social, and economic problems of all engineers.

Engineers Joint Council is composed of ten national engineering societies, three associate societies, and eight local or regional affiliate societies. After several studies spanning the period from 1943 to 1952 a new constitution provided for the affiliation of national, regional and local organizations and established as the objectives activities in the scientific, technical and educational fields. EJC's current committees cover a wide span of technical and professional concern.

# Questionnaire on Organization of the Profession

**(Information copy only and NOT to be returned to NSPE. This questionnaire will be sent to all NSPE members in January, 1960, for them to complete and return.)**

The engineering societies have been confronted with major and far-reaching policy decisions concerning the over-all organization of the engineering profession. In its considerations of this problem, NSPE has been guided by the following precepts:

(1) That an engineer for his full development needs to advance both technically and professionally. The engineer's full development and advancement technically can best be accomplished by the engineer's membership and activity in the technical society which most closely associates itself with his particular endeavors in engineering.

(2) The engineer's full development and advancement professionally can best be accomplished by the engineer's membership and activity in a professional society which is dedicated to the professional interests of all engineers, such as public relations, employment practices, economic interests, legislation, and such professional concerns. This professional society should be one with individual memberships and local, state and national levels of organizations and should be limited to qualified engineers.

In order to more accurately reflect the desires of the individuals in the profession and of NSPE members in particular, your cooperation is requested in answering the following questions:

---

**With the belief that the most effective organization for advancing the professional development of engineers should be based on individual membership (individual membership means voting rights, financial responsibility, and determination of policies and programs through democratic representation):**

(1) Should this organization be so established that democratic representation and individual membership extend from local chapter to state society, and state society to national society?

| Yes | No | No Opinion |
|---|---|---|
| (1) | (2) | (3) |

(2) Should this organization be limited to individuals who are qualified engineers?

| Yes | No | No Opinion |
|---|---|---|
| (1) | (2) | (3) |

(3) Should the basis for qualification be limited to those registered as E.I.T.'s or P.E.'s under the laws of the various states or territories?

| Yes | No | No Opinion |
|---|---|---|
| (1) | (2) | (3) |

(4) How familiar are you with the Functional Plan proposed by the AIEE? (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Read and considered it in detail;

(b) ☐ (2) Heard reference to it in engineering circles but am not familiar with the details,

(c) ☐ (3) Am not familiar with the plan.

(5) How familiar are you with the Engineers Joint Council (EJC)? (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Have participated in its activities;
(b) ☐ (2) Am familiar with it in some detail;
(c) ☐ (3) Am not familiar with the details,
(d) ☐ (4) Am not familiar with it.

(6) How familiar are you with the Engineers' Council for Professional Development (ECPD)? (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Have participated in its activities;
(b) ☐ (2) Am familiar with it in some details;
(c) ☐ (3) Am not familiar with the details,
(d) ☐ (4) Am not familiar with.

**At the present time the EJC, the ECPD, and the NSPE have certain overlapping activities and duplication of committees. There has been interest among engineers in the elimination of this duplication of effort and expense as a basis for more effective organization of the profession.**

(7) Do you believe that a plan to have EJC coordinate technical matters, ECPD coordinate educational matters, and NSPE coordinate professional matters (the AIEE Functional Plan) would be a desirable first step in improving the organization of the engineering profession?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(8) Do you feel a coordinating body of representatives from ECPD, EJC, and NSPE would improve this proposal?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(9) What do you think would be the most effective plan for the organization of the engineering profession at this time? (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Functional Plan;
(b) ☐ (2) Functional Plan with coordinating body,
(c) ☐ (3) Federation of engineering societies at the national level such as Engineers Joint Council,

(10) Do you feel NSPE should join EJC instead of supporting the Functional Plan?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(11) Do you feel NSPE should be a member of ECPD?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(12) Should NSPE admit to its membership qualified but nonregistered engineers? (CHECK ONLY ONE ANSWER)

(a) ☐ (1) At the local, state, and national levels;
(b) ☐ (2) At the local and state levels only;
(c) ☐ (3) At the local level only,
(d) ☐ (4) Not at any level.

**If you checked (a), (b) or (c) in question (12), please answer questions (13) and (14). If you checked (d) in question (12), please skip to question (15).**

(13) Should such additional membership be limited to: (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Members and fellows of the founder societies;
(b) ☐ (2) Members or fellows of any technical society having ECPD—recommended qualifications for these grades;
(c) ☐ (3) Engineers who in the opinion of the board of directors of a state society or local chapter have qualifications equivalent to requirements for registration in that state,
d) ☐ (4) Any graduate of an accredited engineering curriculum.

(14) Should such members be: (CHECK ONLY ONE ANSWER)

(a) ☐ (1) Full members with voting privileges;
(b) ☐ (2) Associate members with voting privileges, but not eligible to hold office;
(c) ☐ (3) Associate members without vote.

**Please complete question (15) regardless of your answer to question (12).**

(15) If nonregistered members were to be accepted at all the national, state, and local levels:

(a) ☐ Should the period for acceptance of such membership be for a limited time only?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(b) ☐ Should there be a time limit on how long an individual may remain as such a member?

Yes (1) ☐ No (2) ☐ No Opinion (3) ☐

(16) In what national technical societies do you hold membership?

☐ (1) ASCE
☐ (2) AIME
☐ (3) ASME
☐ (4) AIEE
☐ (5) AIChE
☐ (6) Other (Specify) .....
☐ (7) None

(17) Please indicate state below through which you hold NSPE membership.

| | | |
|---|---|---|
| 01 Alabama | 19 Maine | 37 Oregon |
| 02 Alaska | 20 Maryland | 38 Pennsylvania |
| 03 Arizona | 21 Massachusetts | 39 Rhode Island |
| 04 Arkansas | 22 Michigan | 40 South Carolina |
| 05 California | 23 Minnesota | 41 South Dakota |
| 06 Colorado | 24 Mississippi | 42 Tennessee |
| 07 Connecticut | 25 Missouri | 43 Texas |
| 08 Delaware | 26 Montana | 44 Utah |
| 09 Florida | 27 Nebraska | 45 Vermont |
| 10 Georgia | 28 Nevada | 46 Virginia |
| 11 Hawaii | 29 New Hampshire | 47 Washington |
| 12 Idaho | 30 New Jersey | 48 West Virginia |
| 13 Illinois | 31 New Mexico | 49 Wisconsin |
| 14 Indiana | 32 New York | 50 Wyoming |
| 15 Iowa | 33 North Carolina | 51 Dist. of Col. |
| 16 Kansas | 34 North Dakota | 52 Puerto Rico |
| 17 Kentucky | 35 Ohio | 53 Canal Zone |
| 18 Louisiana | 36 Oklahoma | 54 Member-at-large |

# Proper Use of The P.E. Seal

By

**HOWARD J. DEPREE, P.E.**

*Professional Engineer and Lawyer, Chicago, Ill.*

WHENEVER I talk or write about the problem of seals, I confess a sense of embarrassment. This stems from the fact that unlike most engineering topics, discussions of engineering seals have to be conducted on a kindergarten level. Since the art of applying seals is only crudely developed, I must talk in a most elementary manner.

One reason for the difficulty in teaching engineers how to seal is that it looks easy. If there is one thing upon which almost everyone prides himself, it is his ability to use the tools of his profession or trade. This is especially true of engineers. Not only do they underestimate the difficulties of sealing, but they tend to think of themselves as individually accomplished. It is difficult to sell a man a new suit when he considers himself already well accoutered.

This poses a dilemma. If I am to make this subject clear to you, I must oversimplify it to the point of confirming your natural prejudices. On the other hand, if I am to paint a true impression, I must frighten or confuse you with a bewildering mass of principles, approaches, and details. I will do my best to take a middle course.

First of all, do you own a seal? If your answer is an emphatic yes, give yourself an "E" for being prepared. However, if you unfortunately have spent your earnings on mink, get prepared to throw at least a fin toward the purchase of your new seal. Section 13 of the Illinois Professional Engineering Act, for example, provides in part as follows:

"Each registrant shall, upon registration, obtain a seal of the design authorized by the Department bearing the registrant's name and the legend, 'Registered Professional Engineer of Illinois'."

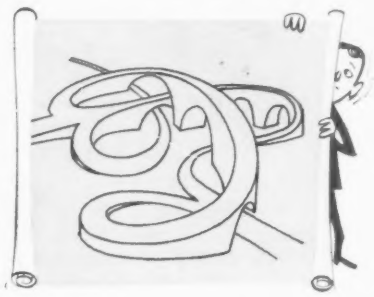
It ought to go without saying that the legislative message is loud and clear. To go even further, Section 28 of the Act announces that a violation of any of the provisions of the Act is punishable by a fine of not less than $100, nor more than $500, or imprisonment in the county jail for a period of not exceeding three months, or both.

We come now to the basic steps in putting this seal to work. The first step is to explore the existing legal situation. Section 13 of the Act relates the following:

". . . Plans and specifications rendered as professional engineering services by a Registered Professional Engineer shall be stamped with such seal, during the life of the registrant's certificate . . ."

Over the years, the professional engineers have built up an immunity to this section of the Act. Some of us justify our actions with the thought that George doesn't stamp his drawings, so why should I. Others plead unfamiliarity with the sealing requirement. Some console themselves with the thought that their client's work was so elusive that it was impossible for him to do a perfect job, and that if their seal is not placed on the work, no discredit can be placed on them. Deception is good football; it is very poor engineering. I ask you, each of you, if any of the foregoing excuses lend dignity and honor to the engineering profession.

MOST engineers fail to realize that increasing numbers of nonengineers are preparing plans and specifications. Proving liability for



negligence based on such plans and specifications should be uncomplicated and assured. In practice, however, this is not the case because a standard for sealing is not practiced by professional engineers.

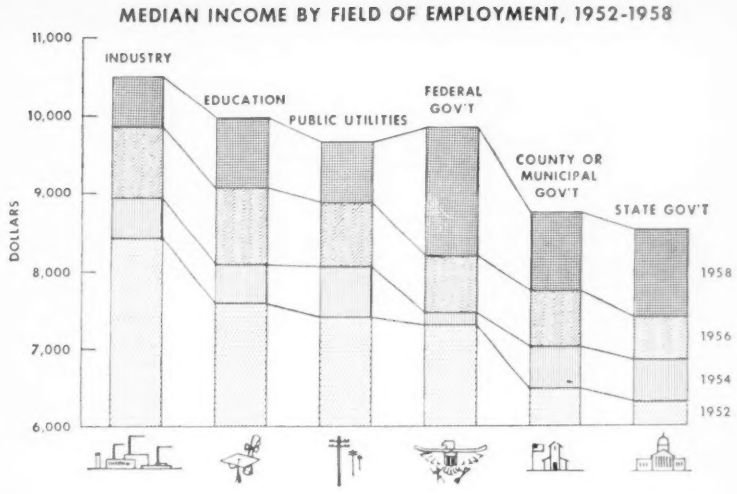
The second step is to apply the substance of the legal message. Here are some of the rules for application of seals that may assist you and make the task completely understandable. Taken by itself, one of these rules doesn't amount to much. Certainly a single application of one of them will have only a slight effect. How much does a grain of sand weigh? Very little. But a sand pile can be heavy. Similarly, these rules are valuable for their cumulative effect; and their cumulative effect, I assure you, can be considerable.

*(Continued on page 49)*

# Latest Report!

## *NSPE's 4th Biennial*

# PROFESSIONAL ENGINEERS' INCOME and SALARY SURVEY




Here is the latest in a continuing series of income and salary surveys of the engineering profession made by the National Society of Professional Engineers. Started in 1952, the surveys are part of a long-range income and salary study program. The fourth biennial survey gives a detailed picture of engineer earnings by year of entry into the profession, by geographical region, by type of employer, by engineering specialty—and by a variety of other categories. Salary and income data from approximately 19,000 registered, professional engineers were studied for this newest survey report. Published in handy booklet form, the 1958 Survey provides a documented study at all levels of professional experience. One of the features of the report is a detailed analysis of salary trends recorded in the four surveys to date.

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- Which of the major engineering specialties has the highest median earnings?
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- How do engineering salaries compare in the fields of education, public utilities, industry, government and private practice?
- How much, percentagewise, have engineer earnings increased throughout the country during the period 1952-58?

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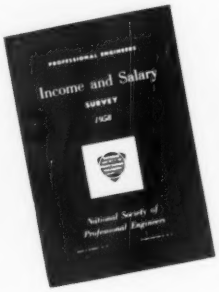


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*A Review of NSPE Activities . . .*

# The Road to Good Engineer-Management Relations

Mr. Cooper

By

**H. P. COOPER, P.E.***

*Chairman, NSPE Engineers-in-Industry Subcommittee*

THE Engineers-in-Industry Subcommittee is presently actively engaged in a program of grass-roots contact which will bring the facts regarding engineering unionism to as many engineers as possible. The intensification of this long-standing and continuing program is due to the fact that within the near future, approximately 7,000 professional engineers employed in twenty-five Western Electric Company installations throughout the country will soon be called on to cast their votes for or against the Council of Western Electric Professional Employees—National, a union affiliated with the Engineers and Scientists of America.

In line with NSPE's policy opposing the unionization of professional engineers, the members of the Engineers-in-Industry Subcommittee, each of whom is particularly well-versed in labor relations and engineering unionization questions, have spoken or are scheduled to speak at special chapter meetings on the subject of engineering unionization in those areas having one or more Western Electric installations.

Briefly, developments leading up to the present situation began in 1952 when the Council of Western Electric Technical (later changed to "Professional") Employees-National, ESA, was certified by the NLRB to represent engineers and some technicians of the company. After negotiating contracts up to 1955, the parties arrived at an impasse regarding the company's rights to assign personnel to the unit represented by the union, and the interpretation of the definition of "professional employee" in the Taft-Hartley Act. After unsuccessful union lawsuits and demonstrations, the union voluntarily abandoned its 1952 certification and filed a petition with the NLRB for a new election and certification. Now, after a year's hearings, written briefs, including one by NSPE, and over 4,000 pages of testimony, the dispute between the union and company over the professional status of certain employees is before the Board for decision. The Board's ruling and direction of election are expected shortly.

In the meantime, the Engineers-in-Industry Subcommittee will continue its special program with the cooperation and participation of NSPE state societies and chapters up to the date of the actual vote.

This type of problem, involving as it does the position of engineers with regard to collective bargaining representation through an engineering union, is not new. In order to better understand its implications, a brief discussion of other related situations and how NSPE has vigorously and effectively acted to meet these conditions as they have arisen, is believed warranted at this time.

**Ohio Turnpike Case**—In 1953 a local of the International Union of Operating Engineers stepped up its efforts to organize the engineering and surveying crew personnel of contractors engaged in various phases of work on the Ohio Turnpike. The tactics employed by the union consisted of threats to employers of strikes and shutdowns in an effort to force the inclusion of the engineering and surveying personnel into the union. NSPE's legislative counsel met with leaders of the Ohio Society in Columbus, Ohio, at which time the entire problem was discussed. It was agreed that a final decision as to procedure would be made by the Ohio Society, and that NSPE would actively intervene, at the

**Mr. Cooper is an engineering executive with the Texas Division of the Dow Chemical Company, Freeport, Texas.*

invitation of OSPE, in any court cases which might develop.

An opportunity presented itself for court action when the union called a strike following the refusal of a civil engineer to join the union. The strike ended a week later, but the engineer was removed as "chief of party" and given an office job at no loss in pay. As a result, the engineer filed unfair labor practice charges against the union alleging that the union had violated the Taft-Hartley Act by causing his employer to remove him from his job as "chief of party" because he refused to join the union. The Ohio Society intervened in behalf of the engineer and was instrumental in bringing the matter before the National Labor Relations Board. The Board found the engineer to be a supervisor within the meaning of the Act, and therefore not entitled to the protection of the Act in bringing an unfair labor practice charge. Accordingly the complaint was dismissed.

The net result of the Board's determination was that the type of engineering employees whom the union sought as members (chief of party) were supervisors as defined in the Act, and thus were not subject to organization and union membership. In essence, the action of the Ohio Society which culminated in the Board's ruling as to supervisory status, frustrated the union's attempt to organize these engineering employees.

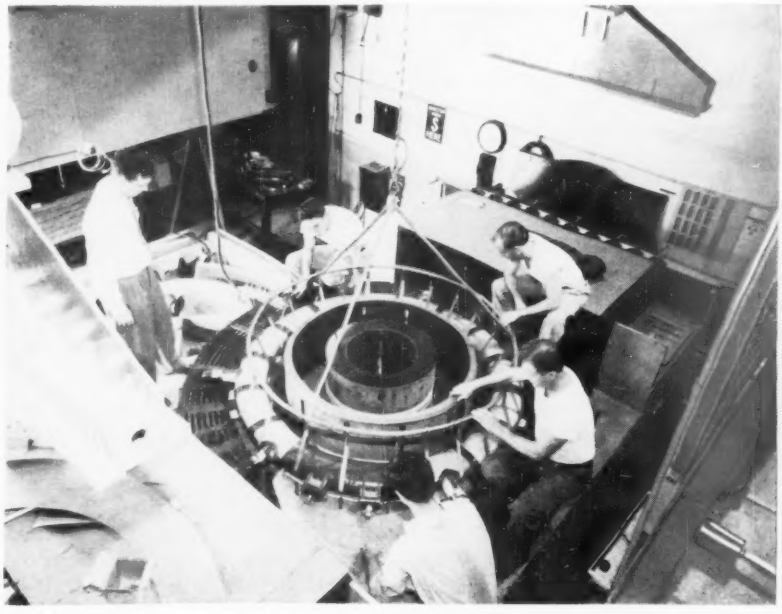
**Minneapolis-Honeywell Election**—The Federation of Honeywell Engineers, which represented the engineers and technicians at Minneapolis-Honeywell Regulator Company, voted in 1957 to disaffiliate from the Engineers and Scientists of America and join the United Auto Workers, AFL-CIO. A group of Honeywell engineers, seeking to disaffiliate themselves and all other engineers from any union connection whatsoever, circulated a decertification petition among all employees represented by the union. This group soon became known as the "decertifiers" and on the basis of their action the company filed a petition with the NLRB for a new election in which engineers and technicians, voting separately, had a choice of voting for representation by the UAW, the ESA or neither.

Prior to the election, the "decertifiers" requested the assistance of the Engineers-in-Industry Section of the Minnesota Society in arranging a special meeting at which time the subject of sounding board organizations would be discussed. The meeting was arranged with the help of NSPE at which D. F. Langenwalter of General Electric (past president of the Schenectady General Electric Engineers Association and a former member of NSPE's Engineers-in-Industry Subcommittee) was the principal speaker. In addition, NSPE's legislative counsel traveled to Minneapolis for a meeting attended by several of the decertifiers and various members of the Minnesota Society. NSPE offered and gave its full support and cooperation to the professional group through the Minnesota Society.

NSPE's efforts were richly rewarded by Honeywell employees when, on May 8, 1957, both the professional engineers and the technicians decisively rejected representation bids by both the UAW and ESA, and overwhelmingly voted for no union representation whatsoever. Undoubtedly, the Honeywell election constituted a crippling blow to UAW's attempts to organize engineers, and probably accounted to a large extent for the subsequent internal split among ESA member unions.

Since then the Honeywell Engineers' Club, a sounding board group, has affiliated with the Minnesota Society of Professional Engineers. An article in the April, 1959, issue of the AMERICAN ENGINEER by J. T. Ludwig, a Minneapolis-Honeywell engineer and member of the NSPE Engineers-in-Industry Subcommittee, discusses the detailed arrangements required for this first affiliation of an industrial "sounding board" type of organization with an NSPE constituent society.

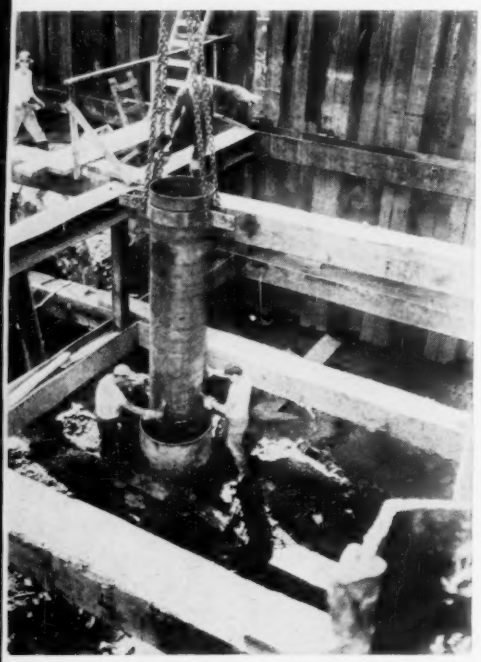
**Westinghouse Friendship Airport Election**—In 1957 the Salaried Employees Association, Federation of Westinghouse Independent Salaried Unions (SEA) and the Westinghouse Engineers Association (WEA), affiliated with ESA, sought to represent engineering and other employees at the Electronics Division of Westinghouse's relatively new Friendship Airport (Baltimore) plant. An election was held on November 7, 1957, in which there were 150 votes cast for SEA, 136 for "no union" and nineteen



Some movements would have this professional engineer, left, brought into unions with technicians who are also shown at work here.

for WEA. On the preliminary question of whether the professional engineering employees wanted to be included in a unit composed of all salaried employees for collective bargaining purposes, both professional and nonprofessional, the vote was 182 No, and 124 Yes.

Since SEA fell three votes short of a majority on the November 7th balloting, a runoff election was necessary. Prior to the second vote,



Engineers in construction work comprise another group who have benefited by NSPE activity in the union field.

the company stepped up direct contacts with its engineering employees. Meetings were held with supervisors, and at one of these an NSPE representative explained the Society's position on unionization of engineers. In addition, literature and information on professional concepts were distributed.

The runoff election in December resulted in a vote of 171 "no union" to 115 for SEA, the Westinghouse Engineers Association (ESA) having been dropped from the ballot after the first round of balloting. Thus, only seven months after a clear repudiation of collective bargaining by Honeywell engineers, union representation was again rejected by engineering employees in another of the country's major industrial establishments.

**Westinghouse Air Brake Case**—In January, 1958, the executive secretary of the Pennsylvania Society of Professional Engineers was contacted by a group of professional engineers employed in the engineering department of the Westinghouse Air Brake Company, located in Wilmerding, Pennsylvania. These engineers desired to terminate their affiliation with the Westinghouse Air Brake Office and Technical Union, which represented them for collective bargaining purposes, although the engineers involved were not actually members of the union. The engineers' request for information and advice was referred to NSPE, and a meeting was arranged at which time the complete ramifications of the problem and possible courses of action for the engineers were to be discussed. A meeting was held on February 8, 1958, in Pittsburgh and those in attendance included NSPE's legislative counsel, representatives from the Pennsylvania Society and its Pittsburgh Chapter and several engineers employed by the Westinghouse Air Brake Company.

Subsequently, an Engineers Professional Association was organized and petitioned the NLRB for a new election on behalf of the professional engineering employees, coincident with the expiration of the Office and Technical Union's contract with the company in June. The engineers' petition granted by the NLRB permitted the choice of representation by the heterogeneous union, the Engineers Professional Association or neither.

Prior to the actual voting, the Office and Technical Union withdrew from the ballot, leaving the sole question whether the professionals wanted to be represented by the newly-formed Engineers Professional Association. By a vote of 36 to 12 the engineers voted against union representation for collective bargaining purposes, and thus once again upheld the professional attitude toward unionization.

**Unionization Attempts Among NYC Engineers**—As a result of an executive order issued by Mayor Wagner in March, 1958, establishing policy and procedures to permit city employees to select collective bargaining representatives, a local of an AFL-CIO union has filed a petition with the city's Commissioner of Labor to represent approximately 5,000 city employees in engineering and technician jobs, including about 500 professional engineers. The New York State Society of Professional Engineers, moving swiftly to meet this unionization challenge, has adopted a resolution declaring that professional employees should be considered separate and apart from nonprofessionals for voting purposes as now provided in the Taft-Hartley Act. Although Taft-Hartley does not apply to governmental employees, it nevertheless is usually of great influence in matters of this type.

The New York group also has formed a Functional Section for Engineers in N.Y.C. Public Service in order to promote the interests of its members along professional lines, and has met with the Mayor to discuss the professional engineers' position and objectives.

NSPE has viewed the New York City situation as only the first in which the various unions may attempt to bring governmentally-employed professional engineers into their fold. "This effort," a Society statement declared, "must be resisted at every level to protect our professional standing and the welfare of the engineering profession. To this end the National Society of Professional Engineers extends its assistance to the member state societies to the extent possible in a manner consistent with NSPE policies."

Implementing this statement, the National Society has been providing direct assistance at the request of the state leaders through participation in several conferences, direct contact via telephone and extensive correspondence.

Although the situation in New York City remains unresolved at this time, the NYSSPE and the National Society are preparing for all foreseeable contingencies.

*(Continued on page 51)*

# New Literature

**EQUIPMENT**—A 12-page, illustrated catalog showing the complete line of Iron Fireman commercial and industrial fuel burning and auxiliary equipment has been announced by the company. Particularly helpful is the "Index and Selection Chart" which simplifies selection of appropriate equipment for any application. This comprehensive catalog covers the entire Iron Fireman commercial-industrial line of oil burners, gas burners, dual-fuel burners for gas and oil, forced draft package units, boiler-burner units, coal stokers, factory wired combustion control panels, and the Iron Fireman SelecTemp steam heating system. One section discusses the selection of fuel or fuels, and types of draft available.

*(Circle 15 in Readers' Service Dept.)*

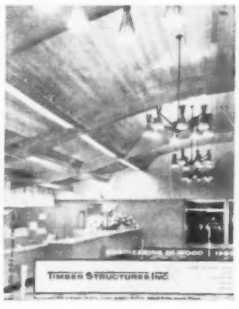
**PUMPS**—A 4-page illustrated booklet from Walter H. Eagan Company gives detailed information and engineering data on their line of time-saving, easily installed packaged fuel oil pump and heater sets for accurate control of temperature and pressure of heavy oils to insure proper atomization and combustion. Advantages cited for the packaged units are quick availability of pump and heater for use, with minimum installation, and avoidance of combustion difficulties so often caused by improper field assembled combinations. Described are single and duplex units for steam or electric drive which heat to 300°F., pump to 400 psi, and have capacities to 3000 gph.

*(Circle 16 in Readers' Service Dept.)*

**SELECTOR CHARTS**—A bulletin containing selector charts for potting compounds, coatings, foams and bonding agents is now available from Plastic Associates. The charts are designed to help the electronic engineer pick the exact resin that will best fit his needs. Definitions are provided for such terms as casting, encapsulation, impregnation, and coating. The charts offer hard, semi-rigid and flexible formulations for each of these processing applications.

*(Circle 17 in Readers' Service Dept.)*

**WOOD**—"Engineering in Wood—1960" is the title of a 24-page catalog published by Timber Structures, Inc., manufacturers of glued laminated arches, beams, rigid frames, trusses,




and decking. The catalog is illustrated with many photographs showing the application of the various timber structural components, and contains detailed drawings, tables of dimensions and section properties, together with specifications and other information of interest to architects and builders. Examples of glued laminated domes are also shown, and a section is devoted to Tim-Deck, a heavy timber decking which is often used with exposed members as sheathing-insulation-ceiling.

*(Circle 18 in Readers' Service Dept.)*

**MINING**—A completely revised bulletin on portable and power cables for the mining industry has been issued by General Electric's Wire and Cable Department. The booklet covers portable and power cables for use in underground mining, both AC and DC systems, and for strip mining and pits and quarries, as well as heavy portable cables for gantry cranes, earth moving equipment, and the like. Both 600-volt and high voltage cables are included. Technical and specification data is given for the complete line of cables and for the various components such as conductors, insulation, and jackets. Splicing and terminating details are also included.

*(Circle 19 in Readers' Service Dept.)*

**LAMINATED PLASTICS**—Basic application information and engineering data on laminated plastics and vulcanized fibre is given in a new condensed catalog published by Taylor Fibre Co. The data in the 8-page catalog is provided to aid engineers in selecting and applying these basic materials for electrical, electronic and mechanical components. The first two pages of text describe laminated plastics and vulcanized fibre in general terms, telling how they are made and where they can be used. One 2-page spread lists general data and engineering data for twenty-one of the most common grades of Taylor Fibre's laminated plastics. The general data give suggested applications, corresponding NEMA grades, military specification, color and forms and sizes in which furnished. The engineering data lists typical physical, mechanical and electrical properties. A second section gives substantially the same type of information for six grades of Taylor Fibre's vulcanized fibre. Special grades of vulcanized fibre are described on the last page.

*(Circle 20 in Readers' Service Dept.)*

**HEATING**—A 12-page illustrated bulletin on Karbate impervious graphite immersion heat exchangers and circulating steam jets for heating or cooling corrosive solutions in all types of tanks is available from National Carbon Company, a division of Union Carbide Corporation. Separate sections on plate, bayonet, and coil type immersion heat exchangers include general descriptive, installation, and operation information. Dimensioned sketches of each type give complete construction details, and tables present information on weights and effective surface areas. Specifications on circulating steam jets include dimensions and installation instructions. Monograms and curves present design information, and sample calculations illustrate the proper application of the equipment under a wide range of operating conditions.

*(Circle 21 in Readers' Service Dept.)*

***These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims. To receive any of the new literature described in this column, merely circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.***

# Money Is Everything!

Well, almost. In any case, it is hard to beat when it comes to business! And money—$19 billion of it—is what the 55,000-plus readers of the AMERICAN ENGINEER spend every year for dozens of products—civil, electrical, mechanical, and chemical. Check the products below and the amounts of money AE readers invest in them annually. Then write one of our representatives (names and addresses below) for the complete survey of readers' purchasing habits as made by E. M. Brooks Survey Associates, an independent Washington, D. C. organization, long prominent in complex governmental statistical work.

*P.S.: Show this page to your advertising manager—he'll be pleased you did!*

| Product | Amount Purchased Annually |
|---|---|
| Air Compressors | $ 69-million |
| Air Conditioners | 525-million |
| Asphalt | 250-million |
| Boilers | 208-million |
| Bonds (Surety) | 430-million |
| Cable | 490-million |
| Cement | 578-million |
| Concrete and Cement Curing Material | 967-million |
| Control Instruments | 154-million |
| Conveyors | 107-million |
| Electric Motors | 537-million |
| Electronics | 222-million |
| Engines | 170-million |
| Heat Exchangers | 370-million |
| Indicating and Recording Instruments | 125-million |

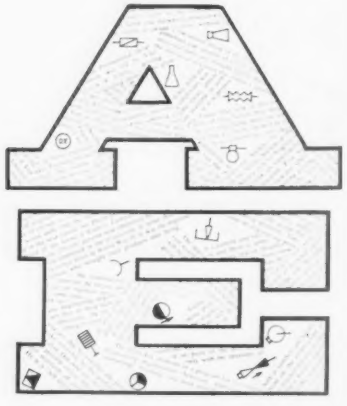
| Product | Amount Purchased Annually |
|---|---|
| Iron/Steel Pipe | 526-million |
| Lighting Appliances | 437-million |
| Materials Handling Equipment | 116-million |
| Paints | 55-million |
| Piling | 400-million |
| Pressure Vessels | 264-million |
| Prestressed Concrete | 711-million |
| Steel, Alloy | 531-million |
| Steel, Structural | 3-billion |
| Steel, Tubing | 191-million |
| Testing Equipment | 78-million |
| Thermal Insulation | 122-million |
| Transformers | 407-million |
| Valves and Fittings | 394-million |
| Ventilators and Heaters | 371-million |

## THE AMERICAN ENGINEER

*America's Fastest Growing Engineering Magazine*

*With a Circulation of 60,000 Monthly!*

ADVERTISING INFORMATION: American Engineer, 2029 K St., N. W., Washington 6, D. C. Telephone: FEderal 7-2211. NEW YORK: Austin LeStrange Co., Inc., 420 Lexington Avenue, New York 17, N. Y. MUrray Hill 5-3277. CHICAGO: LeStrange Co., Inc., 185 North Wabash Ave., Chicago 1, Illinois. DEarborn 2-0248. CALIFORNIA: Richard B. Kilner Company, 465 California Street, San Francisco 4, California. YUkon 2-9030.



# Winter Meeting Program Set For Wichita, February 18-20

- Quesada and Minton Are Guest Speakers
- Committee Reports, Activities Listed

With two outstanding speakers scheduled on the agenda, NSPE will convene in Wichita, Kansas, February 18-20, for a winter meeting which has aroused considerable interest.

E.R. (Pete) Quesada, administrator of the Federal Aviation agency, has been announced as the banquet speaker on February 19. He joins with Major General A. M. Minton, previously announced as the luncheon speaker on the same day, to provide the National Society with an excellent program.

E. R. Quesada

General Minton is director of engineering for the United States Air Force, and a strong advocate of engineering registration.

As administrator of the FAA, Mr. Quesada is responsible for modernizing the Federal Airways system, directing air traffic control of civil and military aircraft, controlling the allocation of the diminishing airspace, and both issuing and enforcing air safety rules.

Following a distinguished career in the Air Force, he retired in 1951 with the rank of lieutenant general.

A full program of committee reports and activities is on tap for the Board in Wichita—the largest city in Kansas. An opening 7 p.m. dinner in the Center Ballroom of the Broadview Hotel on February 18 will feature a talk by NSPE President Harold A. Mosher. His topic: "The Society Moves Ahead."

The Wichita Professional Engineering Society has planned a varied social program for Board members and their wives. The Kansas Engineering Society will also hold their annual meeting jointly with the national get-together.

### *Here's the Program:*

**WEDNESDAY, FEBRUARY 17, 1960**

**9:00 a.m.-5:00 p.m.—Room 104—Executive Committee Meeting**

**THURSDAY, FEBRUARY 18, 1960**

**9:00 a.m.-5:00 p.m.—Room 104—Executive Committee Meeting**

**6:00 p.m.—South Ballroom—Social Hour**

**7:00 p.m.—Center Ballroom—Opening Dinner—"The Society Moves Ahead" Harold A. Mosher, P. E., NSPE President**

**Evening Session, February 18, Following Dinner**

Roll Call of Members of the Board
Reading of Minutes of Previous Meeting
Reading of Communications
Report of Officers
  President
  Executive Director
  Treasurer
Report of Executive Committee
  February 17-18, 1960, Meeting

**FRIDAY, FEBRUARY 19, 1960**

**8:00 a.m.—Regional Breakfasts—Northeastern Region, Room 102; Southeastern Region, Room 104; Southwestern Region, Room 106; North Central Region, Guard Room; Western Region, Green Room; Central Region, Tour Room**

**9:00 a.m.—Professional Meeting—Clan Room**

**PROFESSIONAL DEVELOPMENT GROUP**

**Vice President Hull, presiding**

Further Consideration of Revisions To The Model Law
  Robert Williamson, P. E., Chairman, Registration Committee
NSPE Scholarship Program
  Plans for Expansion
  Report on ARMCO Scholarships
    Leland Hobson, P. E., Chairman, Scholarship Committee
Engineer's Record Book
  Arthur Gompf, P. E., Chairman, Young Engineers Committee
Student Chapter Policy Study
  J. Neils Thompson, P. E., Chairman, Student Chapter Committee
Professional Concepts In The Education of Engineers
  Carl C. Chambers, P. E., Chairman, Education Committee

Situated on the banks of the Arkansas River (foreground) is Wichita, Kansas—site of the 1960 winter meeting of the National Society with headquarters at the Broadview Hotel (extreme left in foreground).

## *Wichita Executive Committee*

Members of the Executive Committee of the Wichita Professional Engineering Society plan with other committee chairmen for the NSPE winter meeting. Committee chairman are, l.-r.: Rex Brunson, entertainment; Louis Montre, finance; Charles Clark, co-chairman of Executive Committee; Guy Shelly, Jr., general chairman, and Bernard Alberts, publicity.

**PROFESSIONAL EMPLOYMENT GROUP**

**Vice President Easley, presiding**

Ethical Studies
Marcus Durlach, Jr., P. E., Chairman, Ethical Practices Committee

Board of Ethical Review
Case 59-1—Advertising of Engineering Services
Case 59-2—Termination of Engineer's Services and Retention of Different Engineer for Same Work
Case 59-3—Preferential Treatment of Building Materials; Free Engineering
Murray A. Wilson, P. E., Chairman, Board of Ethical Review

Restudy of Policies on "Gentlemen's Agreements" and Employment Limitations
L. Eugene Easley, P. E., Chairman, Employment Practices Committee

Functional Section Activities for Engineers in Government
Study of State and Municipal Merit System Provisions and Engineering Personnel Policies
Registration Pamphlet for Engineers in All Levels of Government and Armed Services
Establishment of Monthly Newsletter for Government Section Participants
Study and Analysis of Current Developments Concerning Classification and Compensation of Federal Employees
Wesley E. Gilbertson, P. E., Chairman, Functional Section for Engineers in Government

Functional Section Activities for Consulting Engineers in Private Practice
Preliminary Evaluation of Survey on Federal Contract Fees
Task Force Studies on Liability Insurance
Plans for Testimony Before Congressional Committees on Use of Consulting Engineers
Alfred H. Samborn, P. E., Chairman, Functional Section for Consulting Engineers in Private Practice

Engineers-in-Industry Reports
Revised Policy Statement on Collective Bargaining
NSPE Principles on Labor Legislation Affecting Engineers
Meetings and Status of Western Electric Case
Sounding Board Kit Use
Professionalism Course Material
Response to Industrial Professional Development Award Program
H. P. Cooper, P. E., Chairman, Engineers-in-Industry Subcommittee

**12:30 p.m.—Center and North Ballrooms—General Luncheon**

**Address: The Professional Engineer Program in the United States Air Force**
Major General A. M. Minton, P. E., United States Air Force, Director of Civil Engineering

**Afternoon Session—2:00 p.m.—Clan Room**

**PROFESSIONAL RELATIONS GROUP**

**Vice President Zelhart, presiding**

Latest Developments In Discussions of Organization of Engineering Profession
Garvin H. Dyer, P. E., Chairman, Inter-Society Relations Committee
Architect-Engineer Relations
James P. O'Donnell, P. E., Chairman, Interprofessional Relations Committee

**PUBLIC RELATIONS GROUP**

**Vice President Rouse, presiding**

Public Relations Activities for 1960
John L. Pratt, P. E., Chairman, Public Relations Committee
Engineers' Week—1960
Belton Y. Cooper, P. E., Chairman, Engineers' Week Committee

**ORGANIZATIONAL FUNCTIONS GROUP**

Editorial and Advertising Review—**American Engineer**
G. Ross Henninger, P. E., Chairman, American Engineer Committee
Use of New Membership Promotion Publication
Use of NSPE Publications Catalog
The Introductory Membership Plan in 1960
Thomas T. Mann, P. E., Chairman, Membership Committee
Chapters—The Front Window of NSPE
Frank W. Edwards, P. E., Chairman, State Society and Chapter Activities Committee
Experience and Qualifications for Grades of Technicians
A. C. Friel, P. E., Chairman, Committee on Engineering Technicians

**6:00 p.m.—South Ballroom—Social Hour**

**7:00 p.m.—Center and North Ballrooms—Banquet**

**Address: Honorable E. R. Quesada, Administrator, Federal Aviation Agency**

**SATURDAY, FEBRUARY 20, 1960**

**9:00 a.m.—Clan Room**

**POLICY OPERATIONS GROUP**

**Vice President Christian, presiding**

Report of the Constitution and Bylaws Committee
Lehmann M. Dunn, P. E., Chairman, Constitution and Bylaws Committee
Resolutions
James A. Evans, P. E., Chairman, Resolutions Committee

**Location of 1962 Meetings**

**New Business**

**Adjournment**

**12:30 p.m.—South and Center Ballrooms—Kansas Engineering Society Luncheon**
(Everyone Invited)

**2:00 p.m.—North Ballroom—Continuation of KES Annual Meeting**
(Everyone Invited)

**6:30 p.m.—South and Center Ballrooms—Kansas Engineering Society Banquet**
(Everyone Invited) Entertainment. Dancing

## *LADIES' PROGRAM*

**THURSDAY, FEBRUARY 18, 1960**

**12:00-5:00 p.m.—Hospitality Room, Room 108**
**6:00 p.m.—Social Hour with Men—South Ballroom**
**7:00 p.m.—Opening Dinner with Men—Center Ballroom**
**9:00 p.m.—Hospitality Room, Room 108**
Entertainment during opening session

**FRIDAY, FEBRUARY 19, 1960**

**8:45 a.m.—Breakfast—Rose Room**
**12:15 p.m.—Luncheon with Men—Center and North Ballrooms**
**Afternoon—Open for Shopping. Refreshments—Hospitality Room**
**6:00 p.m.—Social Hour with Men—South Ballroom**
**7:00 p.m.—Banquet with Men—Center and North Ballrooms**

## SEALS

*(Continued from page 40)*

**The cardinal rule of all sealing can be stated in four words: *Use your seal consistently.* That is, don't limit the use of your seal only to situations in which the client or municipal body requires it.**

**Another good rule is: Keep your seal in your own possession so that no attempt can be made by another to use it.**

**The third thing to remember is that your seal is to be affixed only to work which has been done by you, or under your personal supervision.**

**Fourthly, keep your seal up to date by keeping your registration up to date. It is unlawful for anyone to stamp or seal any documents after his registration certificate has expired or has been suspended or revoked.**

**For a fifth rule, establish the habit of placing your seal on the original plan or specification immediately after its completion and before changes have been made on it. Affix your seal to prints of original drawings only after verifying the changes or revisions. In addition, require change numbers for all revisions.**

Also, consider the fundamental matter of taking the trouble to educate yourself on what is involved in turning out a professionally adequate product according to the Canons of Ethics for Engineers. Place your mark only on such work that complies with the Canons.

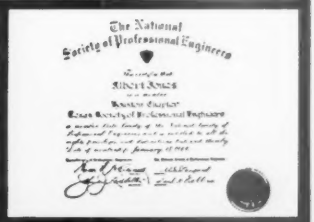
I'm assuming at this point that you have thought out some additional rules. If you have, you will appreciate the difficulty of putting these ideas into words and the contingencies that must be considered.

In closing, I would like to say that conscientious effort to make proper use of your seal pays rich rewards. The deep satisfaction that comes from wrestling with man-sized problems and producing solutions to them should be evidenced by your imprint on the work. Take a firm grip on your seal. Don't let it slip out of your grasp.—**End.**


# *Certificates and Emblems are available*

The Professional Engineer emblem is available styled as cuff links. Can also be ordered in large 3" size as a metal automobile emblem.

The beautiful Society shield is available in several styles. See coupon below.




Order one of the handsome certificates showing your NSPE affiliation for your office wall.

Now available for the ladies is a beautiful Ladies Auxiliary Insignia.

The shield mounted as a tie chain makes a perfect gift. ➡

The shield worn as a tie clasp is distinctive jewelry for any professional engineer member. ⬇

**NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS**
2029 K Street, N. W., Washington 6, D. C.

I am enclosing my check in the amount of $ ——— for which please send me For Professional Engineers, P. E., and Junior Members, J. M.

| J.M. | P.E. | |
|---|---|---|
| ☐ | ☐ | Certificate No. 1 with Chapter and State designation, priced at $1.50 |
| ☐ | ☐ | Certificate No. 2 with State designation, priced at $1.50 |
| ☐ | ☐ | American Engineer Binder, priced at $3.00 |
| ☐ | ☐ | Shield, mounted as a charm, priced at $5.00 |
| ☐ | ☐ | Shield, mounted as a pin, priced at $5.00 |
| ☐ | ☐ | Miniature Shield, mounted on lapel button (⅜"), priced at $2.50 |
| | ☐ | Miniature Shield, mounted on tie clip, priced at $2.50 |
| | ☐ | Shield, mounted on tie chain, priced at $2.50 |
| | ☐ | Professional Engineer Emblem cuff links (set), priced at $3.00 |
| | ☐ | Automobile Emblem (3"), priced at $1.00 |
| ☐ | | Ladies Auxiliary Insignia, mounted as a pin, priced at $5.00 |
| ☐ | | Ladies Auxiliary Insignia, mounted as a charm, priced at $5.00 |

PLEASE MAIL TO _____

ADDRESS _____ REG. NO. _____

CITY _____ STATE _____ ZONE _____

I am a member of the _____ Society of Professional Engineers.
State

(and if Certificate No. 1 is desired) _____
Chapter

***Charms and pins (exclusive of lapel buttons) engraved upon request***

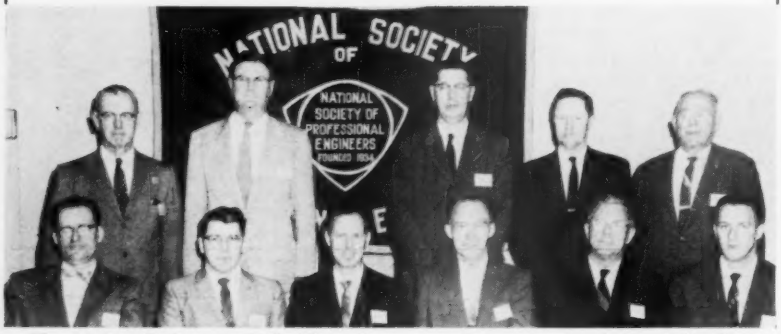
## Soon to Leave for South America

Recently selected as goodwill ambassadors to South America, Dr. Beatrice A. Hicks, P.E., and Rodney D. Chipp, P.E., will embark March 15 on a trip which will take them to Brazil, Argentina, Chile, and Peru. The husband and wife team were chosen from more than 2,000 professional engineers who participated in the Society's "Project Ambassador" fund raising campaign.

## Shreveport Section Officers

Orville T. Ice, Jr., (second from right) is installed as president of the Shreveport Section of the Louisiana Engineering Society by Outgoing President Quentin W. Hargrove (second from left) while First Vice President Tom Ruffin (right) and Second Vice President Marion C. Bubenzer (left) look on. Not shown is Frank Irland, the section's new secretary-treasurer.

## Maine Society Elects




The Maine SPE recently held its first annual meeting and elected officers. Shown seated are, l.-r.: Robert G. Martin, national director; Lawrence F. Cote, secretary; William S. Rollins, treasurer; Richard E. Durst, president; Franklin C. Brawn, second vice president, and David B. Kelley, vice president; standing, Carl H. Crane; John D. Waddell; Robert E. Chute; Stephen K. Gross, and Elmer W. Campbell—all State directors.

## D. C. Society to 'Meet the Air Force'

"Meet the Air Force" will be the program theme for the District of Columbia SPE when they meet January 25 in Washington. Guest speaker will be J. M. Ferry, special assistant for installations to the Secretary of the Air Force.

Major General A. M. Minton, director of civil engineering for the U.S. Air Force, will be the guest of honor.

A number of Air Force officials from other directorates are expected to attend.

## NSPE Dates to Remember

**Louisiana Engineering Society**—Annual Meeting, January 7-9, 1960, St. Charles Hotel, New Orleans, Louisiana.

**Professional Engineers of North Carolina**—Annual Meeting, January 21-23, 1960, Raleigh, North Carolina.

**Texas Society of Professional Engineers**—Annual Meeting, January 21-23, 1960, Harlingen, Texas.

**Mississippi Society of Professional Engineers**—Annual Meeting, January 21-23, 1960, King Edward Hotel, Jackson, Mississippi.

**Idaho Society of Professional Engineers**—Annual Meeting, February 4-6, 1960, Boise Hotel, Boise, Idaho.

**National Society of Professional Engineers**—Winter Meeting, February 18-20, 1960, Broadview Hotel, Wichita, Kansas.

**Kansas Engineering Society**—Anual Meeting, February 18-20, 1960, Broadview Hotel, Wichita, Kansas.

**Iowa Engineering Society**—Annual Meeting, February 22-24, 1960, Fort Des Moines, Des Moines, Iowa.

**Minnesota Society of Professional Engineers**—Annual Meeting, February 24-26, 1960, Hotel St. Paul, St. Paul, Minnesota.

**New Mexico Society of Professional Engineers**—Annual Meeting, February 26-27, 1960, Roswell, New Mexico.

**Tennessee Society of Professional Engineers**—Annual Meeting, February 26-27, 1960, Kingsport Inn, Kingsport, Tennessee.

**NSPE State Presidents' Conference**—April 20-23, 1960, Memorial Union, Purdue University, Lafayette, Indiana.

**National Society of Professional Engineers**—Annual Meeting, June 8-11, 1960, Statler Hotel, Boston, Massachusetts.

## UNIONS

*(Continued from page 44)*

**Legislation: Freedom of Association Bill**—For the past several years NSPE has sponsored the so-called "Freedom of Association" bill introduced in Congress by Rep. Carroll D. Kearns of Pennsylvania. Essentially the "Freedom of Association" proposal would amend the Taft-Hartley Act so as to remove the possibility that organizations of professional engineers may be viewed as company-dominated labor organizations.

At present the Taft-Hartley Act contains a rather broad definition of "labor organization" which includes any organization of any kind in which employees participate and which exists for the purpose, in whole or in part, of dealing with employers concerning grievances, wages, hours or working conditions. In some instances professional engineers have formed local associations, sometimes referred to as "sounding board" groups, which are designed to provide engineers with a means of considering their mutual problems together. Their activity is exclusively within the realm of professionalism, though this sometimes may lead to collateral considerations which touch upon working conditions and even wages and hours.

These local groups include both "employee" professional engineers and "management" professional engineers within their membership. The problem requiring correction exists because "management" professional engineers are included in the membership of these local groups and because in their operations they may touch upon "working conditions." Consequently, they are under a constant cloud of being attacked as "company dominated" labor organizations; and, of course, the domination of a union by the company is illegal under the Taft-Hartley Act.

The "Freedom of Association" bill is designed to rectify this situation by adding a proviso to the Act which expressly exempts organizations of professional personnel from the definition of "labor organization."

*(Continued on page 58)*


## By Popular Demand . . .

### *A HANDY AND DISTINCTIVE BINDER FOR 12 ISSUES OF THE AMERICAN ENGINEER*

Now you can build an easy reference to the many fine articles and features which appear in the American Engineer by slipping your monthly issues into this new handsome maroon (silver lettered) DuPont fabricord binder.

The binder has 12 removable heavy-tempered flat steel rods and solid nickeled screw posts on each end which are easily operated. Though rugged, the binder is beautifully finished and has a reinforced stiff back which is lined for greater wear.

***order yours today*** **$3.00** ***each postpaid***

**AMERICAN ENGINEER Magazine** 2029 K Street, N.W., Washington 6, D. C.

Please send me prepaid.....(no.) American Engineer binders.

I enclose $..... Send the binder(s) to
Amount

Name .....
(Please print)

Street .....

City ..... Zone..... State .....

Promotional Aids for

# NATIONAL ENGINEERS' WEEK

HERE ARE the basic promotional aids on which to build your Engineers' Week program. These items will give your program coverage in local newspapers, on radio and TV stations, and in civic and group displays. Use these promotional materials to show how engineering progress will affect the decade of the 1960's.

1 ***TV Spot Films:*** A set of three 1-minute and two 20-second TV films dramatizing the theme of the 1960 National Engineers' Week. Produced to meet network standards, the films call attention to the role of the engineer in building for progress through the coming decade. Each film qualified for public service TV time during station breaks. A set of these five films will reach your largest Engineers' Week audience. Price: Set of five films, $25.

2 ***"Engineering's Great Challenge—The 1960's:"*** A 15-minute tape recorded radio program dramatizing the contributions engineering will make during the 1960's. Network performers describe engineering achievements in exploring the moon, in building computers, in medical research, in designing new transportation arteries, in structures, and in many other fields. Excellent for use on public service radio time. Price: $6 each.

3 ***Set of Seven TV Slides:*** Obtain extensive TV coverage through the Week with these slides displaying poster-type art work and printed copy calling attention to engineering. May be used during all TV station breaks as public service announcements. Price: $10 per set of 7 slides.

4 ***Tape Recorded Radio Announcements:*** A set of seven 20-second radio spot announcements, made by a network radio and TV announcer. Offers local stations a top-level recording for 20-second station breaks. Price: Set of seven recorded announcements, $3.50.

5 ***Lapel Buttons:*** A high-quality lapel badge with poster design. Each chapter or state society can set its own price for button sales. Prices: 100 to 500—15c each; 500 to 1,000—10c; 1,000 to 3,000—7c; 3,000 to 5,000—5c; and over 5,000—4c.

6 ***Posters:*** Colorful 9 x 11-inch pasteboard posters carrying the 1960 Engineers' Week design and theme. This is the basic promotional item for calling attention to the Week. Use on bulletin boards, in window displays, school exhibits, etc. Large size (18 x 22 inches) also available. Prices: 9 x 11, $4 per 100; 18 x 22, $5 per 100.

7 ***Paper Banners:*** Excellent for display use. Three feet long by 6 inches wide. Has poster design and words "National Engineers' Week" in color. Price: $4 per 100.

8 ***National Engineers' Week Seals:*** Use these brightly colored seals on all office mail from now through February 27. Poster design printed on 1½-inch gummed paper. Price: $3 per 1,000.

9 ***Newspaper mat story on engineering and the exploration of the moon during the 1960's:*** A feature article on how the exploration of our moon will be an engineering accomplishment from the rocket vehicles, through the instruments and structures landed on the lunar surface. Prepared on mat, with illustration, ready for immediate insertion in daily or weekly newspaper. Price .75 each.

10 ***Newspaper mat story on the engineering achievements expected in the decade of the 1960's:*** A feature article on engineering progress, based on the engineering "breakthroughs" of the 1950's. Prepared on mat, with illustration, ready for immediate insertion in daily or weekly newspaper. Price .75 each.

11 ***Logotype:*** A metal cut of a poster design to insert in advertising, special sections of newspapers, industrial house organs, magazines, and other printed matter. All state society and chapter publications should have one. Price: $1 each.

12 ***"Engineering . . . for the Age of Space:"*** A re-issue of the 15-minute tape recorded radio program distributed last year. Excellent for use on public service radio time. Price: $4 each.

---

→ *Use this coupon to order your aids now!*

**National Society of Professional Engineers**

*2029 K Street, N.W./Washington 6, D. C.*

Sirs:

Please rush me items indicated. I enclose a check ☐ money order ☐ in the amount of $.....

I understand remittance must accompany order.

NAME _____
Please Print

ADDRESS _____

CITY _____ STATE _____

1._____TV Spot films @ $25 per set.
2._____Radio tape "Engineering's Great Challenge—The 1960's" @ $6 each.
3._____TV slides: set of 7 slides @ $10 per set.
4._____Recorded spot announcements @ $3.50 per set.
5._____Lapel buttons: 100-500 @ 15c ea.; 500-1,000 @ 10c ea.; 1,000-3,000 @ 7c ea.; 3,000-5,000 @ 5c ea.; over 5,000 @ 4c ea.
6._____Posters: regular size @ $4 per 100.
_____Posters: large size @ $5 per 100.
7._____Banners @ $4 per 100.
8._____Seals @ $3 per 1,000.
9._____Newspaper mat stories on engineering and the exploration of the moon @ .75 ea.
10._____Newspaper mat stories on engineering achievements in 1960's @ .75 ea.
11._____Logotypes @ $1 ea.
12._____Radio tapes "Engineering . . . for the Age of Space" @ $4 ea.

# Widespread Publicity Slated For Engineers' Week in Feb.

- Promotional Aids Used at All Levels
- Many Requests Received at Headquarters

Widespread television, radio, and newspaper coverage of the 1960 National Engineers' Week was indicated this month by the requests received at NSPE headquarters for tape recorded spot announcements, one-minute and 20-second TV films, and newspaper mat stories.

The three promotional aids will be used extensively by local chapters as part of community, state, and national activities in connection with the 1960 observance, February 21-27.

This year's Engineers' Week will be the tenth under the sponsorship of NSPE. It will feature career conferences for high school students, talks by engineers before civic groups, banquets, scholarship awards, exhibits, film showings, guided tours through local industrial and research firms, open house activities at engineering schools, and a variety of other projects. Thirteen leading engineering figures have been named as individual sponsors for the 1960 Week. National chairman for the Week this year is Belton Y. Cooper, Birmingham, Alabama, a design engineer for U.S. Pipe & Foundry Company.

The theme for the Week is "Engineering's Great Challenge—The 1960's." The poster design is centered around a photograph of the half moon taken with the 100-inch telescope at Mount Wilson. The poster symbolizes lunar exploration—one of the great challenges which the engineering profession will face during the coming decade.

Two of the five TV spot films available from the National Society this year are twenty seconds in running time. Previously all of the spot films have been one-minute films. The change was made to facilitate the use of the films in 20-second station breaks during "prime" viewing time. This includes local breaks between network programs. The other three films in the set of five are one minute in running time.

The TV slides available from the National Society may also be used during 20-second station breaks. These slides have been projected on a monitor screen at a major network station in Washington, D. C., and have received the approval of the technical people at this station for such things as background tone, readability of the printed matter, and screen size limitations.

A new item for radio use this year is the set of seven 20-second spot announcements made by a network announcer and recorded on tape. These tapes offer local stations seven top-level recorded announcements for 20-second station breaks. Station program directors can be asked to schedule a different recorded spot announcement for each day during Engineers' Week. Descriptions and prices of the TV films and radio tapes, as well as other aids available from NSPE, can be found on the full-page advertisement adjoining this page. Orders for this material should be placed as early in January as possible.

Reproductions of President Eisenhower's message concerning Engineers' Week may be ordered in bulk amounts, at no charge, from the National Society headquarters. These reproductions may be used for mailings to industry, engineering schools, government agencies, newspapers, magazines, and industrial house organs. The reproductions can also be used in window and lobby displays, and in local newspaper advertisements published during Engineers' Week.

### TV Films

The tape recorded spot announcements and TV films offered by the National Society are small enough to fit in a girl's hands, but these promotional items can be used to reach a community-wide audience. For an expenditure of $28.50, a chapter can utilize public service broadcast time on radio and TV to call attention to the engineering profession.

### Filling Orders

NSPE clerical staff members have a full January schedule of filling orders for promotional materials for the 1960 National Engineers' Week, February 21-27. Orders are filled at the NSPE headquarters for local chapters, state societies, industrial firms, high schools and colleges, government agencies, and engineering and other organizations.

# Thoughts on Professionalism...

By PAUL H. ROBBINS, P.E.
*NSPE Executive Director*

## The Opinion Questionnaire

NSPE prides itself on being a grass-roots organization. Its very structure is designed to be responsive to the wishes of the composite membership. The national organization governed as it is by representatives of the state society reflects the thinking of the fifty-one state societies. Each state society governed as it is by the representatives of the chapters reflects the wishes of the chapters. Anyone attending a national meeting recognizes grass-roots representation at work, for each director is ever conscious he is expected to present the thinking of his state society and must return to explain his comments and votes on national programs, policies, and actions.

THE engineering profession is facing some important decisions in its organization for effective action, particularly in professional activities. The directors wish the guidance of all the members. Each member should have an opportunity to express himself on the elements of these important decisions. To provide this opportunity, the questionnaire carried elsewhere in this issue will be sent to each member later this month with his ballot.

OVER the years a number of patterns have been suggested for the organization of the profession. Some have been tried and failed; others have never gotten beyond the discussion stage. Some have been unrealistic; some have been too idealistic; some have successfully met a pressing problem without trying to either form an organization or endeavor to encompass the many facets of the profession. As the profession has begun to not only be given but to assume greater stature and responsibility, the interest in these considerations has increased.

TOO often proposals have foundered on the rocks of details. It has been NSPE's contention throughout these considerations, however, that there are certain basics which must form the foundation of any lasting organization which will result in benefits to the members of the profession and, at the same time, meet the needs of our economy and nation. Many of the opinions sought, therefore, deal with these basics rather than organizational details.

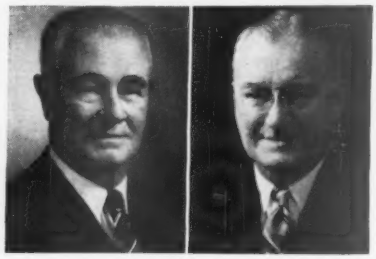
OPINIONS such as looked for in this questionnaire, however, should be thoughtful, informed opinions. The Inter-Society Relations Committee has prepared a kit on which most chapters have based chapter discussions on this subject. But because there will be a number of members who could not for one reason or another participate in these discussions, a summary of the information is a feature of this issue.

IT is to be hoped that each member will inform himself, at least to the extent of reading the material in this AMERICAN ENGINEER, will supply his honest opinion, and will return the questionnaire with his ballot in order that the composite opinions reached will be as representative as possible of the thinking of NSPE membership. Only an informed membership, expressing their opinions, can bring about this result.

## New York Chapter Honors Engineers

Two engineers were honored recently with annual awards for distinguished services to their profession by the New York Chapter of the New York State SPE at its annual dinner at the Hotel Statler.

Awards were presented to Frederick C. Gardner, president since 1954 of Ebasco Services Incorporated, and to Max H. Foley, recently appointed by Mayor Wagner as chairman of the board of Standards and Appeals of the City.



Messrs. Gardner and Foley.

Charles Wurmfeld, president of the Chapter, said the double award was to provide recognition both for an engineer who had made a notable career in the business world and for an engineer who had given up the advantages of private practice for public service.

## TV Program Sponsored By Chapter in Indiana

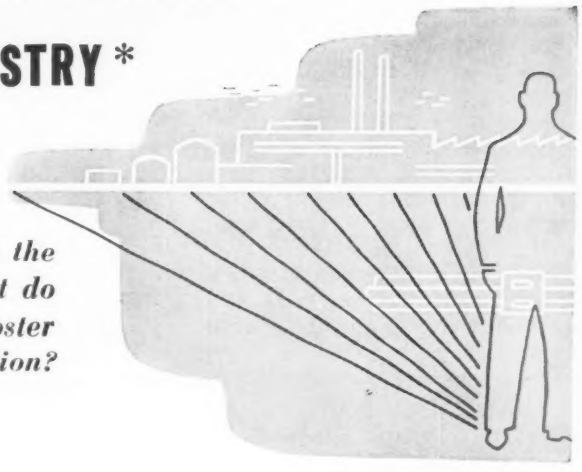
Activities of the engineering profession is the theme of a new television series entitled "Horizons" being sponsored by the Anthony Wayne Chapter of the Indiana SPE.

Presented twice a month in cooperation with WANE-TV, of Fort Wayne, Indiana, the series had its premiere in October and will continue for fifteen programs. Each program will show different engineering activities and procedures and explain its technical characteristics as it applies to everyday living.

A major purpose of the public service feature is to reach the high school audience and interest more young people in entering engineering as a career.

*Executive Research Survey Report*

# CAREER SATISFACTIONS of PROFESSIONAL ENGINEERS IN INDUSTRY*



***What do engineers in industry rate as the most satisfying job factors? What do engineers think management can do to foster professional recognition?***

You can get specific answers to these questions and many more about engineers in industry in this latest Executive Research Survey report. Based on data gathered from lengthy "depth" interviews, the survey brings out the non-salary career satisfactions of engineers in industry at three stages of professional experience—3 to 6 years, 10 to 15 years, and 20 to 25 years. "Career Satisfactions of Professional Engineers in Industry" is an intensive study of motivation factors in a representative sampling of engineers employed in American industry. Comprehensive statistical analyses—as well as detailed comments by engineers—are given throughout the published report. Use the handy coupon below to order your copy of this valuable addition to your engineering library.

***Note These Chapter Titles:***

- **Career Outlook of Professional Engineers**
- **Satisfaction and Frustration on the Job**
- **The Question of Professional Status**
- **Are The Values of the More Successful Engineers Different from the Others?**

* Survey made by the Opinion Research Corporation, Princeton, N. J., for the Professional Engineers Conference Board for Industry, in cooperation with the National Society of Professional Engineers.

**Professional Engineers Conference Board for Industry**
2029 K Street, Northwest, Washington 6, D. C.

Yes, I am enclosing check or money order for $....., for which please rush the following to me:

.....copies of "Career Satisfaction of Professional Engineers In Industry" at.....
.....copies of "How to Train Engineers In Industry" at.....
.....copies of "How to Attract and Hold Engineering Talent" at.....
.....copies of "How to Improve the Utilization of Engineering Manpower" at.....
.....copies of "How to Improve Engineering-Management Communications" at.....

Name .....

Firm .....

Address .....

☐ Check if you are a member of NSPE.
(Make checks payable to the Board).

**Price ("Career Satisfactions of Professional Engineers in Industry"):**

$1.50 to NSPE members

$3 to non-members

Other Conference Board reports:

$1 to NSPE members

$2 to non-members

## Kent Named New Assistant of PSPE

Clifton T. Kent, formerly senior staff engineer of the Pennsylvania Turnpike Commission, has been appointed assistant executive secretary of the Pennsylvania Society of Professional Engineers, and has assumed his new duties at the Society's headquarters in Harrisburg, Pa. The announcement was made by John T. West, Jr., executive secretary.

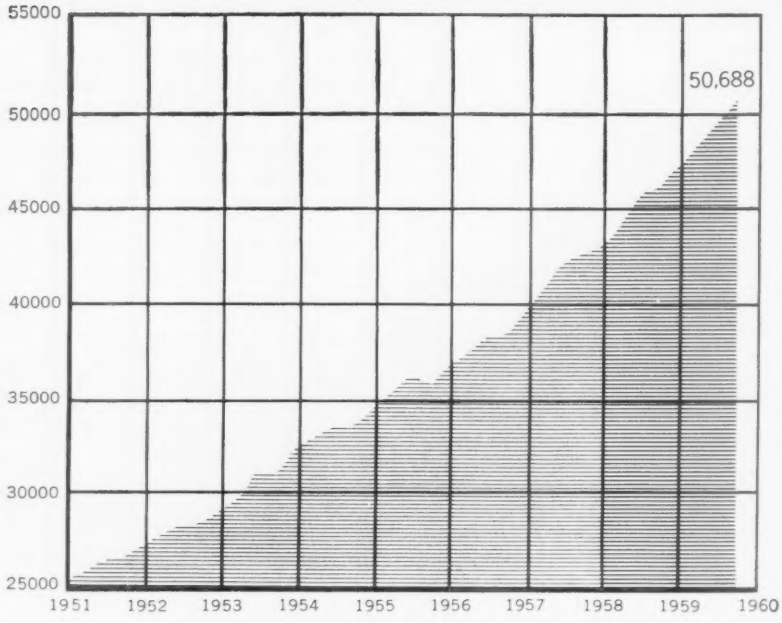
Mr. Kent is a member of the Harrisburg Chapter, PSPE, Central Pennsylvania Section of the American Society of Civil Engineers, Arctic Institute, and an associate of the Highway Research Board. With time out for service in World War II and the Korean conflict, he has been on the Turnpike Commission staff since 1938.

## Wayne E. Ault Elected President of Ohio SPE

Wayne E. Ault became the 1960-61 president-elect of the Ohio Society of Professional Engineers at their Board of Trustees meeting in December. Of the total twenty-eight Ohio Chapters, twenty-two were represented at the election.

Mr. Ault is manager of engineering at "Automatic" Sprinkler Corporation of America, Youngstown, Ohio. He has been a vice president of OSPE for two years and is a former chairman of the National Society's Engineers-in-Industry Subcommittee.

## NSPE Membership Continues to Grow!




## Anthony Wayne Chapter Past Presidents

Past presidents of the Anthony Wayne Chapter of the Indiana SPE were honored at a recent meeting. Shown front row are, l.-r.: A. K. Hofer, Robert Loveland, Richard Erb, and Paul Berg; back row, Mark Tam, William Darling, Ralph Walb, Paul Lauletta, and Clue Ferguson, Jr.

## Congressman Alger is Speaker at Dallas

The Honorable Bruce Alger, U. S. Congressman from Dallas, was guest speaker at a recent meeting of the Dallas Chapter, Texas SPE.

The meeting theme was "Bring a Prospective Member," climaxing the chapter membership drive. Fifty-one guests-of-members attended.

At the meeting, it was announced that the Dallas Chapter is first in line for the TSPE Mary Dannenbaum Trophy given annually to the outstanding Texas Chapter based on participation in civic and community affairs, legislation, public relations, attendance, programs, and increase in membership.

Using a procedure which has come to be a favorite with Alger audiences, the Congressman put his prepared speech aside and let his engineer audience choose the topics they wanted to hear. He spoke on labor reform, the defense program, and debt management. There was a question and answer period after his talk.

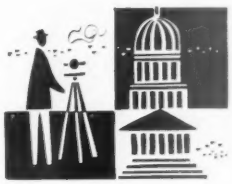
Miss Gloria Allen, public relations director of the Texas Society, spoke briefly on "Professional 'Togetherness' and its Value." President William L. Cobb presided.

# Why You Should Join the Functional Section for Consulting Engineers!

**Through the Functional Section for Consulting Engineers in Private Practice, members of NSPE have the opportunity and machinery to be active in the furtherance of private practice interests within the framework of the professional society.**

**At no time has it been more important for members in private practice to exchange information and keep informed of vital developments of direct concern:**

**1.** **The Functional Section is taking vigorous action to combat the recent Congressional criticism of the use of consulting engineers. A comprehensive and detailed survey of fees on Federal projects is in progress.**



**2.** **One of the Task Forces is hard at work to improve the NSPE-approved liability insurance for consultants.**

**3.** **The Task Force which prepared the recent Fee Manual has broadened its scope to cover additional practice problems.**

**4.** **Other task forces are working to improve the Functional Section organization, and ethical aspects of consulting practice. Specific work is being performed on problems of free engineering advertising, engineer-architect relations (standard contract forms have been prepared), and a complete national roster of consulting firms.**

**To achieve the many goals indicated above, and many others, the Functional Section needs the help of every NSPE member in the private practice field—principal, owner, employee.**

## *Plus . . .*

**The new *Private Practice News* is an important source of current information on developments pertinent to consulting practice. It is sent monthly to each participant without charge.**

**FILL OUT THE COUPON BELOW AND *PARTICIPATE* IN YOUR FUNCTIONAL SECTION**

National Society of Professional Engineers
2029 K St., N. W.
Washington 6, D. C.

Enroll me as a participant in the Functional Section For Consulting Engineers in Private Practice and place me on the mailing list for the *Private Practice News* and other information of importance to consulting engineers.

Participation is limited to NSPE members.

I am a member of the..... Chapter..... State Society

Name of consulting engineering firm: .....

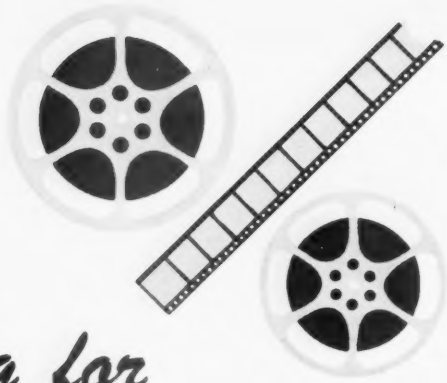
Position Title: .....

Name .....

Street .....

City ..... Zone .... State .....

# NSPE Presents:



# "Building for Professional Growth"

**Here is a film covering the activities of the National Society of Professional Engineers at the chapter, state, and national levels. A milestone in the NSPE public relations program, "Building for Professional Growth" is a filmed presentation on the values and benefits of Society membership. Activities covered in the film include NSPE efforts in registration; research projects such as the Income and Salary Survey, the Professional Engineers Conference Board for Industry reports; legislative cooperation; National Engineers' Week, and other programs. Also included are scenes from actual chapter, state, and national level meetings.**

***"Building for Professional Growth" can be shown on any 16mm sound projector. Reservation requests should be made for three choices of dates. Notification of available date will be sent from NSPE headquarters immediately after each reservation request is received.***

**RENTAL FEE: $10**

(Includes 8-page booklet "Ideas For Your NSPE Film Program," and 15-minute talk on NSPE.)

Use this coupon to reserve your film

**NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS**
2029 K St., N.W. • Washington 6, D. C.

*Please reserve us the NSPE film "Building for Professional Growth" for the following choice of dates:*

_____ (1st) _____ (2nd) _____ (3rd)

**SHIP TO:**

Name_____

Street_____

City_____ Postal Zone_____ State_____

(Make checks payable to National Society of Professional Engineers)

## UNIONS

*(Continued from page 51)*

Through the "Freedom of Association" bill NSPE hopes to remove any doubt as to the legality of nonbargaining professional associations of engineers, and thus provide a mechanism for the interchange of ideas on a professional basis.

The recent U. S. Supreme Court decision in the *Cabot Carbon* case, in which nonbargaining employee committees were held to be labor organizations, points up the need for Congressional action on the Kearns' Bill.

**Legislation: Construction Industry Provision in New Labor Reform Act**—The labor reform act, signed by the President on September 14, 1959, contains several amendments to the Taft-Hartley Act. One of these, the so-called "construction industry" provision, permits employers and unions in the construction industry to enter into collective bargaining agreements without going through the usual election process to select an exclusive union representative. The law further provides that such agreements may require union membership of employees after the seventh day of employment.

NSPE's concern over this provision centered around its possible effect upon existing rights of professional employees under the Taft-Hartley Act, which guarantee professional employees a vote separate and apart from nonprofessionals on questions regarding union representation. In testimony, meetings and correspondence with key Congressional leaders, and backed by the vigorous support of an effective grass-roots campaign, NSPE consistently urged that any "construction industry" provision adopted by Congress contain adequate safeguards protecting the existing separate election rights of professional employees.

Although Congress failed to insert specific language spelling out the rights of professional employees in the construction industry to a separate election, both the Senate and House Labor Committee reports accepted the NSPE point of view, and stated with reference to

the construction industry provision that it is neither the intention nor effect of this language "to affect the status which professional engineers now enjoy under the statue."

The statements in the two reports are extremely significant for the engineering profession, in that should the question of professional voting rights arise, resort to the legislative history of the new labor reform act will make it clear that professional voting rights remain unaffected by the construction industry amendment.

**NSPE as "Friend of The Court"**—The National Society has filed "friend of the court" briefs in two major cases involving the rights of industrially employed engineers under the Taft-Hartley Act. The first, *Herman v. Leedom* was concerned with the NLRB's refusal to permit professional engineers to file a decertification petition for severance from an over-all larger unit. The engineers (employed by Westinghouse Electric), with the support of NSPE, filed suit in Federal district court to compel the Board to recognize the petition. While suit was pending, however, the Board acted on a petition of the Federation of Westinghouse Independent Salaried Unions to represent the engineers and certain other employees. In the ensuing election, a majority of the engineers voted "no union," thus accomplishing the practical objective of their original suit—severance from the nonprofessional group. Despite the urging of NSPE and the engineers for a declaratory judgment, the court dismissed the action on the ground that the issue had become moot.

The question involving the rights of professional engineers to a separate *decertification* election remains unanswered, although the NLRB general counsel has since ruled that professionals can withdraw from a mixed unit dominated by nonprofessionals and establish their own independent unit when an existing contract is terminated. This was the procedure successfully followed in the Westinghouse Air Brake case discussed earlier.

The second case, also involving engineers at Westinghouse, concerned the rights of professional engineers to a separate election in certification procedures and ultimately reached the U. S. Supreme Court. This case, *Leedom v. Kyne*, arose when the NLRB placed nine nonprofessionals in a voting unit with 233 professional employees without granting the professionals a separate vote to determine their wishes regarding inclusion with the nonprofessional employees as prescribed in section 9 (b)(1) of the Act. The Board's opinion that professional employees are entitled to a separate vote only when constituting a *minority* in the proposed unit, was challenged in Federal court by the engineers with the support of NSPE. Both the district court and court of appeals upheld the engineers' point of view and ruled that the NLRB had violated an express mandatory prohibition on its authority and consequently such action was directly reviewable in Federal courts. The U. S. Supreme Court, which reviewed the case on the petition of the Board, agreed with the lower courts in a 7 to 2 opinion.

**Conclusion**—The above summarization of NSPE activity to protect the rights of professional engineers does not reflect the more routine day-by-day activity of supplying information, giving advice, providing material, participating in meetings, etc., which deal with various aspects of the over-all question in a more general way, and which do not reach the "case" stage. This secondary activity is of comparable importance, however, and in some ways of greater importance, because it often helps to prevent a situation involving professional employees from reaching an undesirable stage. It is what may be termed, "preventive medicine" in professional employment relations.

This review should not suggest that NSPE feels it has all the answers in this field of interest, or can always solve urgent problems. It does indicate, however, that NSPE is vitally interested in helping professional engineers with such problems. The first ingredient in resolving any employment problem among professional employees is a desire on the part of the professionals themselves to do something about it, and a resolution to act professionally and ethically in accomplishing their goal. When that spirit exists NSPE stands ready to do its utmost to serve the individuals involved, and thereby to further serve the profession.—**End.**

## *Past Presidents Honored*

The Suffolk County Chapter of the New York State SPE honored its past presidents by recently holding a "Past Presidents Dinner." The Chapter was founded in 1929, and two of the charter members, Fred Biele and Charles Birs, were able to attend. Shown, seated, l.-r.: Charles P. McFadden, past president 1947-1948; Fred J. Biele, past president 1932-1935; John D. Ettinger, past president 1949-1950; Albert Cass, past president 1953, and Charles C. Birs, past president 1956-1957; standing, l.-r.: Donald W. Chilton, secretary; Leland C. Fitts, first vice president; Harrison Weber, past president 1945-1946; John E. Stahlberg, past president 1954-1955; James J. Sweeney, second vice president; John B. Blydenburgh, president; Bazil C. Kime, master of ceremonies, and Gordon K. Ahlers, in charge of arrangements.

By Mrs. Garvin H. Dyer, Chairman of the Ladies Auxiliary Advisory Committee.

**The Topeka, Kans., Auxiliary** also report activities to raise money for their scholarship fund. They held teas and coffees during the month of May, dividing their group up into smaller groups with fifteen hostesses and fifteen co-hostesses, with eight to ten members being invited by each hostess. This Auxiliary gives a $100 scholarship each year to both Kansas University and Kansas State University. They also report 150 attended the family picnic in June. Their first meeting of the fall in September was well attended.

**The Mahoning Valley Auxiliary** of Ohio reports their first event of the fall season was a garden party at the home of Mrs. Walter Rauh on September 23. A dessert luncheon was served and various games of cards furnished entertainment. Mrs. Anthony Gambrel, president, and Mrs. Ernest Salvidge, co-chairman of the Social Committee, presided at the tea table. They held a casserole supper and square dance at Pioneer Pavillion in Mill Creek Park in October to entertain their husbands. And on November 18 they held a "new member night" at which all women eligible for membership were invited.

**The Wichita, Kans., Auxiliary** wishes to extend a cordial invitation to the wives whose husbands will be attending the winter Board meeting at Wichita in February to accompany their husbands. The Wichita Auxiliary have been quite busy for several months planning entertainment for the women, and they assure you that you will have a wonderful time. This will also be the State convention of the Kansas Engineering Society, so special invitation goes to the Kansas women.

**Mrs. J. C. Strasbourger of Muncie, Ind.,** reports that they organized an auxiliary last June, and are very enthusiastic about it. As this chapter covers several counties, many members have to travel some distance to the meetings. They hope soon to establish a scholarship fund. Mrs. Strasbourger was elected the first president.

**The San Fernando Valley Auxiliary** (California) is starting its second year, and has a full calendar of interesting events. Besides the regular meeting each month, they held a get-acquainted steak barbecue in August, a membership tea in September, a fashion show in October and their annual Christmas party in December. They also have plans for a ladies night in April at which they are guests of the men. The Auxiliary furnish corsages for all women attending. In May they assist at the annual awards dinner by acting as hostesses and arranging the decorating. In June they will hold the annual stardust ball and joint installation of officers of the men's group and the Auxiliary. This sounds like a very ambitious program and might serve as a model for other groups.

**The Valley Forge Auxiliary of** Pennsylvania report an interesting year of activities, which started off during the summer with a swimming party.

**The State Auxiliary of Connecticut** is launching a newsletter for the first time this year. They are preparing for Engineers' Week by contacting all secondary schools in Connecticut and arranging for speakers. A scholarship will be given during Engineers' Week to a "woman in engineering."

**Mrs. L. S. Miller, president of** the Southeast Georgia Auxiliary reports a very interested and active auxiliary, even though they are quite scattered. They meet regularly each month concurrently with their husbands and their attendance has been very good.


## CLASSIFIED ADVERTISING

Minimum 3 lines.
Undisplayed, $1.80 per line. Three or more consecutive insertions $1.50 per line each.
Displayed: Same rate as General Advertising.
Positions Wanted: Undisplayed, 90¢ per line. Three or more consecutive insertions 75¢ per line each. Displayed: General Advertising rates, less 50%.
Box Number chargeable as one line.

Mail Box Number replies to:
AMERICAN ENGINEER
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**Positions Available**

Mechanical Engineers. Excellent opportunity for Project Managers, Project Engineers, and Design Section Chiefs experienced in design of heating, ventilating, air conditioning, piping, power plants. Extremely wide variety of work (including client contact) with established Midwest consulting firm. Permanent. Good starting salary, advancement, and vacation program. Moving expenses paid. All replies will be answered. Box 100, AMERICAN ENGINEER.

Large association in Washington has need for an engineer on its expanding staff. Person should be free to travel at least half time to work with local affiliates. Work will involve promotion, organization, speaking, trouble shooting and development of promotional literature. Salary dependent upon qualifications. Applicants please give age, education, experience, and salary expected. Reply Box 102, AMERICAN ENGINEER.

Centrifugal Pump Manufacturer looking for experienced design and application engineer for slurry and water pumps. Emphasis is on slurry designs. These are established lines, in production for years. Proper person could become department head in a reasonable time. Send resume of experience, salary requirements to Box 106, AMERICAN ENGINEER.

General Contractor in central Missouri, looking for graduate engineer, preferably civil, for permanent job estimating, building layout, other varied work. Experience in such work is mandatory, although employer expects to train in this job for particular duties. Must be highest type individual, with ambition and a deep sense of responsibility. Prefer man under 30 years of age. Salary open. No traveling. Position open in two months. Write Box 105, AMERICAN ENGINEER.


## *Recent Deaths*

Frank W. Bromley, of Phoenix, Arizona, member of the Arizona Society of Professional Engineers.

Claude K. Mathews, of Kansas City, Missouri, member of the Missouri Society of Professional Engineers.

Lester J. Richards, of Midland, Michigan, member of the Michigan Society of Professional Engineers.

E. E. Rosaire, of Dallas, Texas, member of the Texas Society of Professional Engineers.

Thomas C. Shedd, of Urbana, Illinois, member of the Illinois Society of Professional Engineers.

Stacey H. Widdicombe, of Phoenixville, Pennsylvania, member of the Pennsylvania Society of Professional Engineers.

Clarence A. Winder, of Pasadena, California, member of the California Society of Professional Engineers.

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**Consulting Engineers—Architects**

Surveys, Reports, Design, Supervision, Consultation, Traffic Problems, Tunnels, Bridges, Highways, Airports, Industrial Buildings, Waterfront & Harbor Structures, Complete Soils, Materials & Chemical Laboratories.

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Complex Signal & Industrial Communications, Hotel & Hospital Centralized Radio, Master TV Antennae Systems, Auditorium Acoustic Planning, Closed Circuit TV Applications. Consultation and Design Complete with Plans & Specifications.

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Civil, Structural, Sanitary
Municipal, Electrical, Land Planning

**West Palm Beach, Fla.** **Ft. Pierce, Fla.**

### PROFESSIONAL DIRECTORY RATES

| | |
|---|---|
| **12 mos.**, paid in advance | $ 96.00 |
| **12 mos.**, billed monthly @ $9.00 ea. | 108.00 |
| **6 mos.**, paid in advance | 54.00 |
| **6 mos.**, billed monthly @ $10.00 ea. | 60.00 |

### SOUTH FLORIDA TEST SERVICE, INC.
**Testing—Inspection—Research—Engineers**

Consultants and specialists in corrosion, weathering and sunlight testing.

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Member A. C. I. L.

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NSPE President Mosher, left, presents the national charter to William C. Hill, president of the Professional Engineers of Oregon, while James D. Caufield, PEO president-elect, looks on. (See story below.)

## *Mosher, Robbins Speak At Oregon Meeting*

A featured item of the 1959 convention of the Professional Engineers of Oregon was the presentation of the NSPE charter to the Oregon Society.

NSPE President Harold A. Mosher gave the keynote address and Society Executive Director Paul H. Robbins also spoke.

## *Newly-Elected Officers*

New officers of the St. Lawrence Franklin Chapter of the New York State SPE are, l.-r. (seated): Lee O. Atkins, secretary-treasurer; Edward McHugh, president, and Edward Lew, director; (standing) Charles Clarridge, director, and Howard Lechler, vice president.

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# Advertisers' Index


Adache Associates, Inc. ..... 63
Edw. J. Adamec ..... 62
Aerial Map Service Co. ..... 65
Aero Service Corp. ..... 64
Albright & Friel, Inc. ..... 64
American Air Surveys ..... 65
Ammann & Whitney ..... 62
Andrews and Clark ..... 62
Auburn and Associates, Inc. ..... 64
W. L. Badger and Assoc., Inc. ..... 62
Michael Baker Jr., Inc. ..... 64
Harry Balke Engineers ..... 63
Elmer S. Barrett Associates ..... 63
Bedell and Nelson ..... 61
Benham Engineering Co. ..... 64
Black & Veatch ..... 62
Borden Metal Products Co. ..... 16
Brockway, Weber & Brockway, Inc. 61
Buchart Engineering Corp. ..... 64
Oakle P. Bullock ..... 61
Burns & McDonnell ..... 62
Burns & Roe, Inc. ..... 62
Capitol Engineering Corporation ... 64
Homer L. Chastin & Associates .... 61
Chas. W. Cole & Son ..... 61
Commonwealth Associates Inc. ..... 62
Consoer, Townsend and Associates . 61
C&W Sales ..... 2
Dean Thermo-Panel Coil Div. ..... 10
De Leuw Cather & Company ..... 61
Electrical Contractors Assoc., Inc. . 61
Engineers Inc. ..... 62
Engineers Laboratories ..... 62
Eustis Engineering Company ..... 61
Fay, Spofford & Thorndike ..... 61
Ferguson-Gates Engineering Co. ... 64
Forrest and Cotton, Inc. ..... 64
Foster & Cafarelli ..... 62
Franklin Engineering ..... 61
Frazier-Simplex, Inc. ..... 64
Freese & Nichols ..... 64
Galv-Weld Products ..... 6
Gannett, Fleming, Corddry & Carpenter, Inc. ..... 64
Gilbert Associates ..... 64
Giles Drilling Corporation ..... 65
Gustave M. Goldsmith ..... 63
Emil Gruenberg & Assoc. ..... 62
Hall Laboratories ..... 64
Hardesty & Hanover ..... 62
Philip J. Healey, Inc. ..... 63
The Hinchman Corporation ..... 62
Howard, Needles, Tammen & Bergendoff ..... 62
Industrial Ovens, Inc. ..... 63
International Engineering Co., Inc. . 61
Jones, Henry & Williams ..... 63
Kaiser Engineers ..... 61
A. C. Kirkwood & Associates ..... 62
Elmer A. Kish ..... 63
Kuljian Corporation ..... 64
D. C. Latella & Associates ..... 64
Lawrie & Green & Associates ..... 64
Walter E. Lobo ..... 62
Lockwood, Andrews & Newnam .... 64
Eli M. Lurie ..... 61
Madigan-Hyland ..... 62
Metcalf & Eddy ..... 62
Miner and Miner ..... 61
Modjeski and Masters ..... 64
Moran, Proctor, Muser & Rutledge . 62
John J. Mozzochi & Assoc. ..... 61
Niagara Blower Co. ..... 5
The C. W. Nofsinger Co. ..... 62
James P. O'Donnell ..... 62
Oklahoma Testing Laboratories .... 64
Palmer & Baker Engineers, Inc. .... 61
Parsons, Brinckerhoff, Quade & Douglas ..... 9 & 62
V. C. Patterson & Associates ..... 64
Pennsylvania Drilling Co. ..... 65
Photronix, Inc. ..... 65
James G. Pierce & Assoc. ..... 64
Pittsburgh Testing Laboratory ..... 64
Praeger-Kavanagh ..... 62
Robert and Company Associates .... 61
Ross-Martin Co. ..... 13
Russell and Axon ..... 62
A. C. Sampietro ..... 62
Sargent & Lundy ..... 61
Seelye Stevenson Value & Knecht . 63
Servis, Van Doren & Hazard ..... 61
Singstad & Baillie ..... 63
Soil Testing Services, Inc. ..... 61
South Florida Test Service ..... 61
Sprague & Henwood, Inc. ..... 65
Stanley Engineering Company ..... 61
Steinman, Boynton, Gronquist & London ..... 63
Sverdrup & Parcel, Inc. ..... 62
Syska & Hennessy, Inc. ..... 63
Tippetts-Abbett-McCarthy-Stratton . 63
Toledo Testing Laboratory ..... 63
Emerson Venable ..... 64
Vogt, Ivers, Seaman & Associates .... 63
Warren George ..... 65
Water Service Laboratories, Inc. .... 63
Walter H. Wheeler ..... 62
Whitman, Requardt and Associates . 61
Wight & Co. ..... 61
Wilberding Co. ..... 61
Wilson & Company ..... 61



## *For Your Convenience . . .*

**'s EXPANDED Readers' Service Department!**

Now it is easier than ever for you to get information f-a-s-t on new products and services. The other side of this page when folded makes a *self-addressed reply envelope* that is all ready to come back to us. All you have to do to use it is to first read the advertisements, and the "Progress in Products" and "New Literature" features in every issue, noting that each makes specific reference to numbers on the form below.

Then if you want more information about any item, simply circle the corresponding number on the form, sign, fold, fasten and MAIL TODAY!

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**January, 1960**

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| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
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# Progress in Products

## LARGE CIRCLE TEMPLATE — Item 30

Rapidesign, Inc., announces the No. 140 large circle template. Each template has 45 circles, diameter sizes from 1/16" to 2¼", increments 64ths to 11/32", 16ths to 1" and 8ths to 2¼". Each circle is individually milled, offering a precision smoothness. Pencil allowance provides for the utmost in accuracy. Made of .030 matte finish plastic, printing is on the matte finish, and the employment of an etch ink makes for durability. Actual size of the template is 8¼" by 7¼".

## WINDOW COVERING — Item 31

A window covering which combines the functions of blinds, draperies, and curtain with unusual beauty and permanence, is scheduled for nation-wide introduction in the near future. Basic component of the Javlis Blind is a three-inch square of Styron 672 Verelite molded in a three-dimensional pattern. When assembled, individual squares are vertically interlocked with spring steel rods, and the entire blind is suspended on nylon rollers from standard heavy duty drapery track.

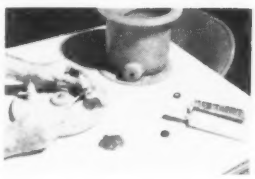
## BLUE PRINT SAFE — Item 32

A new, vertical blue print safe which holds up to 1,000 plans in a fireproof, burglar-proof compartment has been announced. Prints are retained on 30" long, removable steel "Glider" plan holders for quick vertical filing. Evenly spaced thumbnuts on plan holders "tension-hold" 100 prints, to 30" wide and 48" in length. Filed T-topped plan holders are retained from end-to-end in all-steel channels, with no chance of bending or springing, it is claimed.

## TAPES — Item 33

Labelon Tape Company announces a new type of laminated tape for use in the preparation of plant and office layouts. This new type of pressure sensitive layout tape consists of two layers of .0175" thickness each of matte acetate. The symbols are printed on the top of the bottom layer then laminated to a top layer of the same material. Labelon claims definite advantages over the former tapes. There is no glare when used on the transparent planning boards.

## PLASTIC ADHESIVE — Item 34

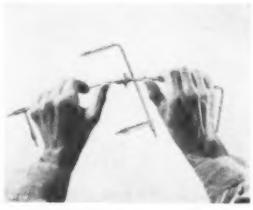


A plastic adhesive which adheres to most metals but has a nonmetallic base, has been developed by Beetle Plastics of Crompton & Knowles. Named Bond-Seal, the new adhesive is nonconductive and not affected by corrosive chemicals, it is claimed. It is intended for watertight and oiltight repairs on metals and other materials when nonconductivity and resistance to acids and alkalies is needed.

## WHEELS — Item 35

Morrison Products, Inc. has developed a new line of porcelainized enamel blower wheels and assemblies that exhibit exceptional resistance to corrosion, it is claimed. The porcelainized (glass-coated) wheels are designed for process equipment, air-conditioning equipment, cooling towers, evaporative condensers, air washers, and other applications where corrosion or abrasion may be present. Wheels are available in 10" through 20" sizes, in capacities to 12,000 CFM. Corresponding porcelainized housings and bearing brackets can also be supplied.

## POCKET-SIZE TUBES — Item 36



F. W. Dwyer Mfg. Co. now offers a new series of pocket-size tubes fabricated from hypodermic-needle grade stainless steel. With an O. D. of 1/8", and over-all lengths of 6" or 12" the tubes are small enough to fit into standard pocket size gage cases. These tubes are claimed to give excellent results in duct diameters of 4" or less, and will perform comparably with standard size tubes in any duct where insertion of not more than 12" is required.

## "THERMO-LAG" — Item 37

"Thermo-lag," a new product developed by Emerson Electric, has been selected after exhaustive tests by NASA for use on test capsules for the man-in-space program. Thermo-lag is the name given to a new family of compounds applied like paint that reduce and control the temperature of materials or instruments subjected to intense heat. It dissipates heat by vaporizing in the same manner that dry ice vaporizes. It has many commercial possibilities, according to the manufacturer.

**This column describes new products of general interest to professional engineers. For further information, circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.**

***These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.***

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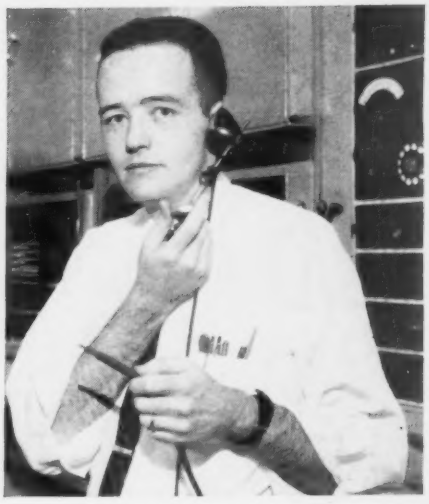

**CORNELIUS J. MANNING,** skilled technician in one of America's communication centers, is typical of many thousands of payroll savers in industry and business who are buying U. S. Savings Bonds regularly.